

TECHNOLOGY

REVIEW *March* 1950

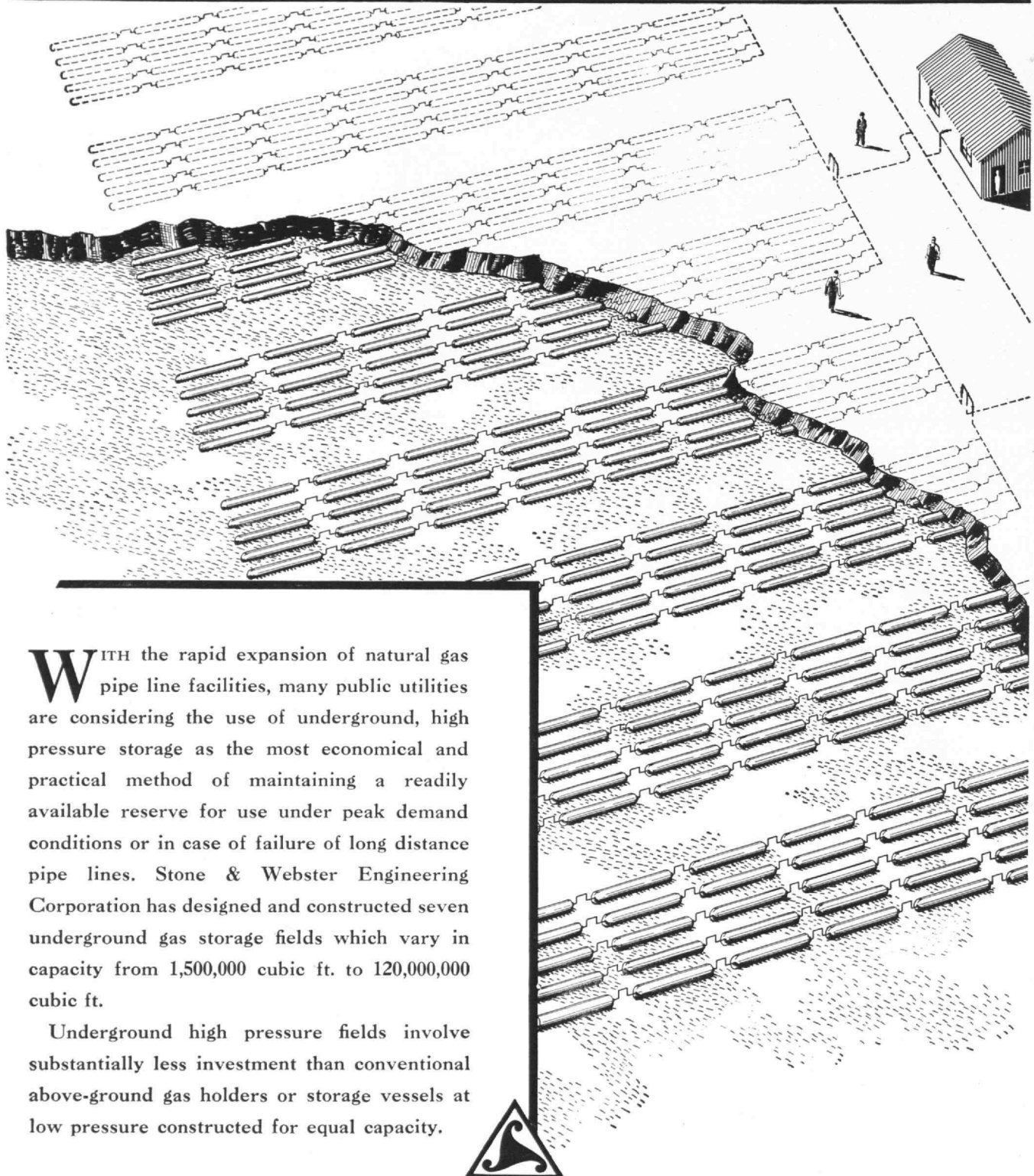


technology review

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From Nature's Gas Wells to Man Made Storage



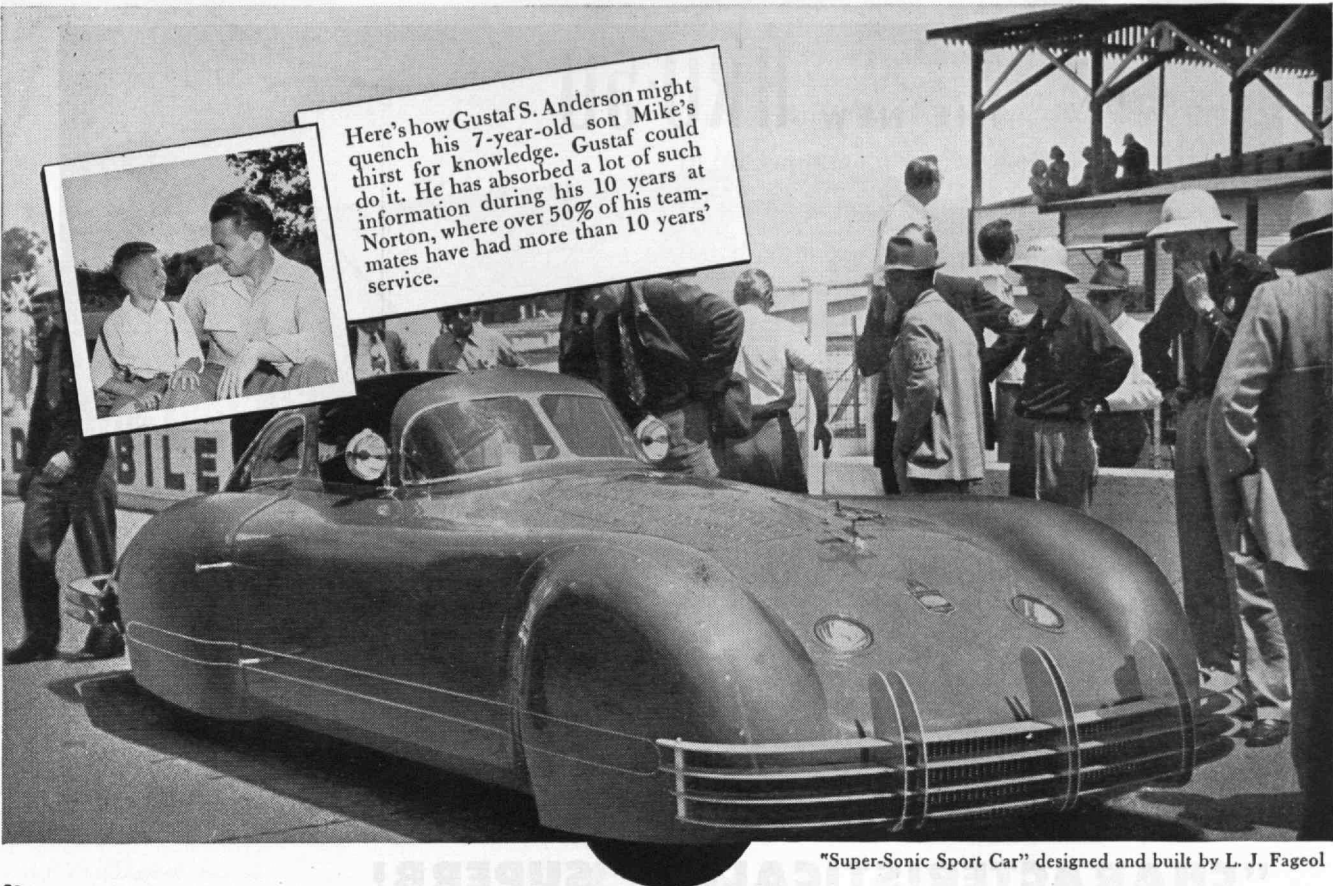
WITH the rapid expansion of natural gas pipe line facilities, many public utilities are considering the use of underground, high pressure storage as the most economical and practical method of maintaining a readily available reserve for use under peak demand conditions or in case of failure of long distance pipe lines. Stone & Webster Engineering Corporation has designed and constructed seven underground gas storage fields which vary in capacity from 1,500,000 cubic ft. to 120,000,000 cubic ft.

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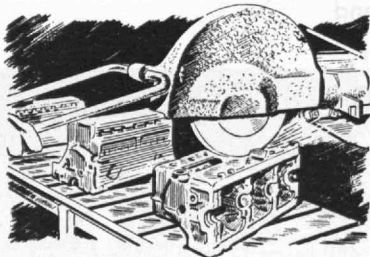


Here's how Gustaf S. Anderson might quench his 7-year-old son Mike's thirst for knowledge. Gustaf could do it. He has absorbed a lot of such information during his 10 years at Norton, where over 50% of his teammates have had more than 10 years' service.

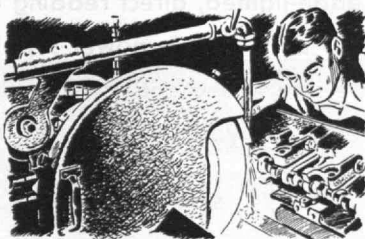
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SUMMARY OF CHARACTERISTICS

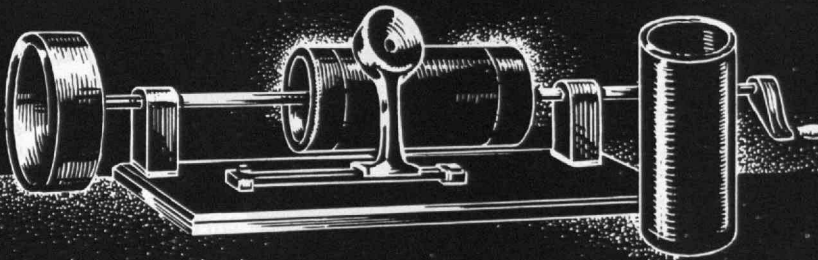
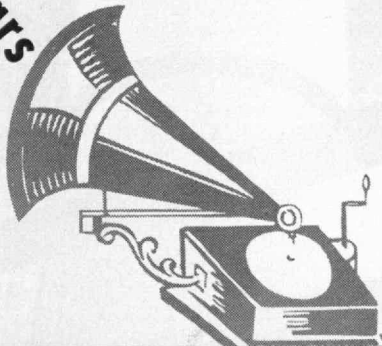
- Freq. Range:** 50-430 kc., 480 kc. — 35 mc.
Tube Complement: 6BA6, 1st r.f.; 6BA6, 2nd r.f.; 6BE6, mixer; 6C4 h.f. oscillator; 6K7, 1st i.f.; 6K7, 2nd i.f.; 6H6 det. & a.v.c.; 6H6, a.n.l.; 6SJ7, 1st audio; 6SN7, phase splitter and S-meter amp.; 6V6 (2) p.p. audio; 5V4G, rect.; 6J7, b.f.o.; OBZ, volt. reg. Accessories: Crystal Calibrator, 6AQ5; NFM Adaptor, 6SK7, i.f. amp., 6H6, ratio det.; Select-a-ject, 12AT7 (2).
Power Output: 8 watts undistorted, push-pull amplifier fidelity ± 1 db 50-15,000 cycles.
Sensitivity: 1 microvolt or better at 6 db sig./noise.
Selectivity: Variable from 15 kc. overall to about 400 cycles at 40 db.
Drift: Negligible after warm-up.
Calibration: Direct frequency reading.
Shipping Weight: 100 lbs. incl. spkr. and 4 coils.
Dimensions: 16½" deep x 19¾" wide x 10⅞" high.
Price: \$335.00 (less speaker).
Accessories: 100/1000 kc. calibrator, \$19.95; NFM adaptor \$16.95; SOJ-2, \$24.95.

Carbon black brings music to your ears

Carbon black has always had a definite place in the manufacture of phonograph records. Its use dates back to the time when records looked like dictaphone cylinders and there was music only on one side.

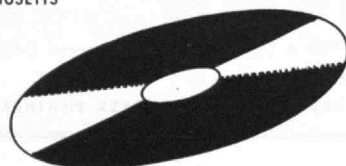
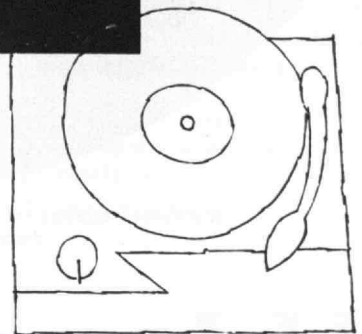
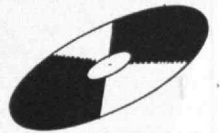
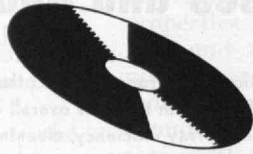
All carbon blacks used in the industry are added primarily for their coloring power, and possible lubricant value.

CABOT carbon black makes it easy to recognize the best quality record. It gives that shiny, jet-black appearance music lovers accept as the hallmark of an excellent record.



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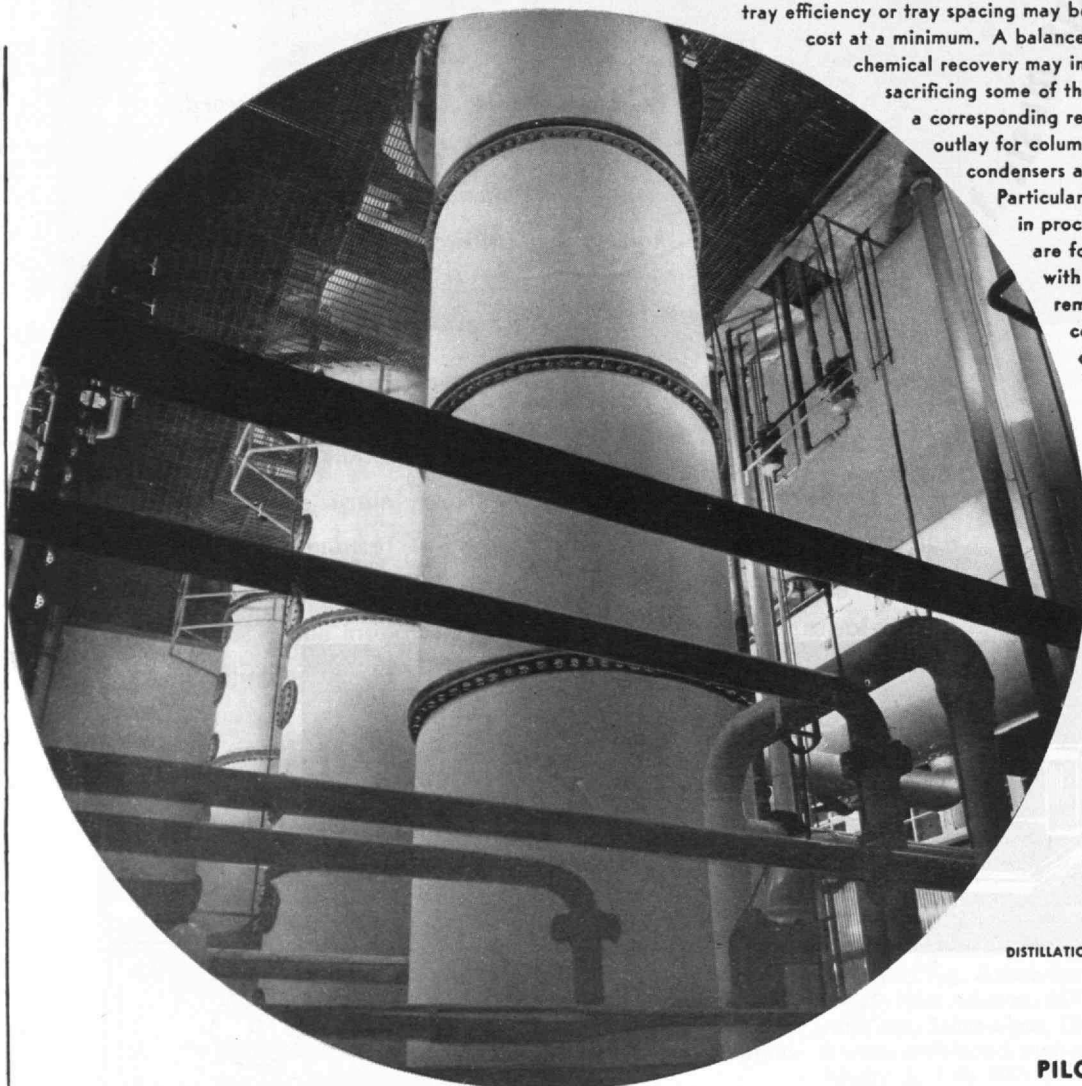


distillation processes and equipment for . . .

. . . the separation of hydrocarbons or other organic chemicals, should be designed for efficiency in terms of overall operating costs and amortization of capital investment. Tray efficiency, cleaning facility and resistance to corrosion are the principal factors to be considered. For practical purposes, tray efficiency or tray spacing may be reduced to keep tower cost at a minimum. A balance of utility costs against

chemical recovery may indicate the desirability of sacrificing some of the recoverable material, with a corresponding reduction in the capital outlay for columns and associated calandrias, condensers and heat exchangers.

Particularly when potential changes in process or product specifications are foreseen, distillation columns with sectional shells and removable trays of light alloy construction offer special opportunities for economy because of the ease of transfer from tower to tower as well as cleanability and resistance to corrosion.



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What GENERAL ELECTRIC People Are Saying

C. H. LANG,

Vice President

DISTRIBUTION: There's a notion that distribution adds nothing to the product. Engineers, who *do* add a lot of value to the product, are particularly susceptible to this fallacy. But it's just a matter of basic economics.

→ Production adds one value to the product: form utility. It gives raw materials a useful form.

Distribution, on the other hand, adds *two* recognized economic values: place and time utility.

For example, fuel oil in the refinery has been given *form* utility—it will burn efficiently. But it takes distributors and salesmen and advertising men and accountants and truck drivers to get the oil into your fuel tank at home—place utility—when the cold weather arrives—time utility. And anyone who has caught a cold during a temporary shortage of fuel oil will tell you that this time and place utility is part and parcel of the product's final value.

A. S. M. E.,

New York City,

November 30, 1949



D. E. CHAMBERS,

Research Laboratory

DEVELOPMENTAL STEPS: Suppose a gifted chemist who is interested in learning new facts about the mechanism of polymerization discovers something of significance. This fact may be the means which, properly applied, may allow a completely new material or series of materials to be created. The work of discovering the new fact, of producing for the first time the new materials and describing their general properties, is what I would define as "research."

But it doesn't follow, necessarily, that the first bit of this new material is suitable for an application. It may have general properties which make it appear to have excellent promise for a certain field, but it is usually necessary to expend much more work to fit the new material for a specific field of application—indeed, work in this category may continue almost indefinitely to

produce variations of the material for new applications as these crop up.

It may be that one result of the work on this material produces an insulation of markedly superior properties. However, it will probably be found that, while the material may be reasonably satisfactory to mold, it cannot be extruded—or it cannot be worked in some other way without additional modification.

When the new material has been evolved into, let us say, something really satisfactory for molding operations, the product designer is free to apply it to his various problems. Then, finally, comes the manufacture of the specific product.

National Electronics Conference,

Chicago,

September 27, 1949



D. W. HALFHILL,

Apparatus Department

RECORDING SYSTEM: The need for an adaptable recording system capable of remotely registering non-electrical, as well as electrical, quantities has long been realized. Though individual recording problems have been solved in specific cases and with varying degrees of success, a single device adaptable to the recording of many different entities such as pressure, electrical quantities, temperature, and mechanical motion has not been readily available.

An answer to many of these problems may be found in a recording system recently developed for a flight-recorder program which required that barometric altitude and vertical acceleration forces be logged continuously by passenger-carrying airplanes. A number of unusual features have been included in this recording system which may prove useful outside the field of aviation.

The inherent flexibility of the system allows the recording of almost any quantity, merely by at-

taching appropriate primary detectors... Because its light, sturdy construction permits the system to be used where other devices fail, successful operation is found in marine use, on surface vehicles, and in aircraft. Other uses may be found in industry, where an adaptable recording device has been needed for some time.

General Electric Review,
November, 1949



E. E. CHARLTON,

Research Laboratory

MEDICAL ELECTRONICS: In the operating room, as well as in general diagnosis, is there not a need for an electronic stethoscope with greatly increased sensitivity over the ordinary stethoscope? The surgeon should have instant and continuous knowledge of the heart action of his patient while on the operating table. He is now dependent on observations made with the ordinary stethoscope or by simple feeling of the pulse—observations which cannot be made continuously by the busy anesthetist. In addition it may happen that the heart action becomes so weak that its observation is difficult with present instruments...

A small microphone taped to the patient picks up the heart beat and modulates a small radio transmitter. The anesthetist carries on his person a miniature receiver which activates a sound reproducer of the bone-conduction type. (Use of the bone-conduction type is preferable in order not to diminish the normal hearing capacity of the anesthetist.) Also a permanent recording of the heart action during the operating period could aid the anesthetist to observe slow variations in the heart action and variations in heart-beat intensity.

Inter-American Congress of Surgery,
Chicago,

October 21, 1949

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THE TABULAR VIEW

Let's Organize. — Within a decade after the first class was graduated from the Institute, the need for binding its graduates together was felt by an energetic group of youths, most of whom were still in their twenties. The organization of the M.I.T. Alumni Association, on March 17, 1875, is ably recorded (page 247) by H. E. LOBDELL, '17, Executive Vice-president of the Association, and closely associated with student and alumni matters since his undergraduate days at M.I.T. during World War I. For 25 years, Mr. Lobdell has been associated with the office of the Dean of Students; from 1922 to 1930 he was editor of *The Review*, and since 1930 has been its publisher.

New Weapons. — The February issue of *The Review* contained the first of a two-part article discussing the probable nature of any future war. This study, by M. H. WILLIAMS, "student of geopolitics, teacher, writer, and veteran of World War II," is concluded in this issue (page 250) with further consideration of the destructiveness of some recent innovations of military weapons. The problem of tranquil living is not a matter of technological progress. Indeed, since there is no defense against atomic weapons, our salvation lies rather in developing those political and ethical means which (through sufficiently strong and effective means) outlaw the use of modern arms so that free men may live in peace.

Combine Forces. — Postwar progress in the manufacture and application of laminated materials for structural uses is recounted (page 253) by ALBERT G. H. DIETZ, '32, Associate Professor of Structural Engineering. Dr. Dietz points out that the success of modern sandwich laminates results from combining the properties of core materials with those of panels having strong, smooth, tough surfaces. When two dissimilar substances thus combine forces, the resultant sheets make better building materials, especially when strength, light weight, and low cost are important considerations.

Strike! — PAUL MEADOWS, Associate Professor of Sociology at the University of Nebraska, has long been a student of the social aspects of technology. His writings on such topics have appeared in *The Review* from time to time during the past four years, as well as elsewhere. Dr. Meadows' book, *The Culture of Industrial Man*, published in January, continues his studies of the machine age. So does his article in this issue (page 257). It is largely a coincidence that "A Study of Strikes" should be scheduled for publication at a time when the nation faces its worst coal stoppage in decades. Our social myopia has advanced to the stage of tolerating industrial paralysis on a nationwide scale when strategically placed minorities may be unwilling or unable to place national welfare above their own narrow self-interest.

"Turn — Nighttime into Daytime." — Of special interest to Technology Alumni is the chronicle on "A Stein Song" (page 246) prepared by LONSDALE GREEN, '87.



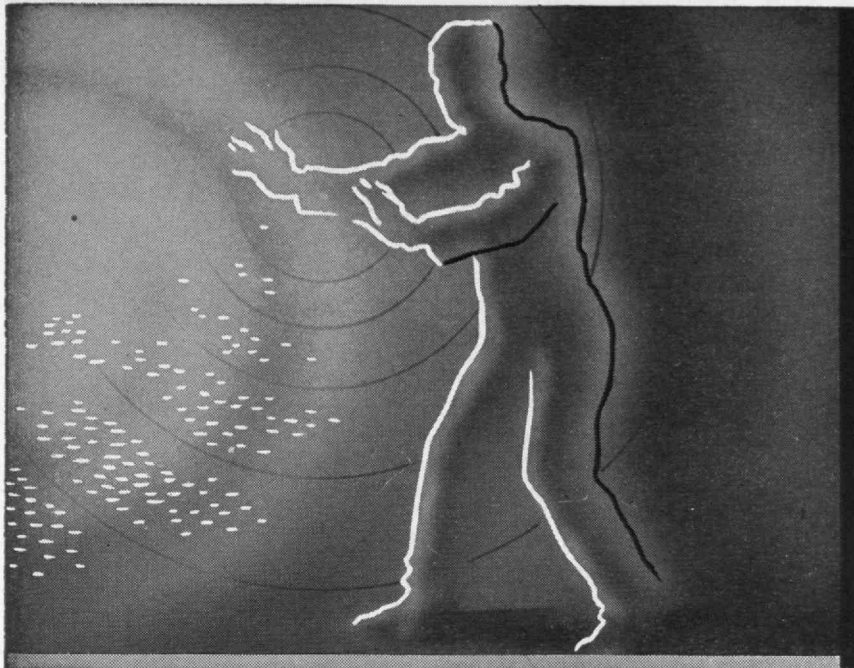
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MAIL RETURNS

Centennial Corroboration

FROM ELBERT G. ALLEN, '00:

Your January number, with its splendid articles reviewing the progress of the past 50 years, is most interesting. Surely it is worth while to stop, look back over our past, and set our sights for future endeavors at frequent intervals. But your statement that this is the inauguration of a new half century raises a ghost which we older Alumni thought was laid 50 years ago.

If it is established that the first year was the year 1 A.D., then it follows that the last year of the first half century was the year 50 A.D., and that the last year of the first half of the Twentieth Century is the year 1950 A.D. And of course the half century will not be completed until the end of the last moment of December 31, 1950.

To corroborate this conclusion, a number of competent authorities were consulted with the following results.

The *Encyclopaedia Britannica* states in its article on the Calendar: "Every year the number of which is divisible by 4 is a leap year, excepting the last year of each century, which is a leap year only when the number of the century is divisible by 4. . . ."

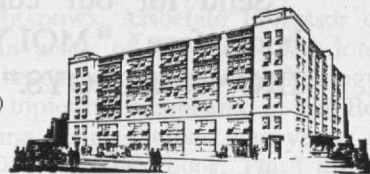
The National Bureau of Standards, in answer to a direct inquiry says: "You are correct in your interpretation of the half century. . . . The reasoning is simple. The first year of our present era is designated as the year 1 A.D. It was not completed until the end of that year. Similarly the half centuries are not completed until the end of the 50th year."

The Nautical Almanac Office of the United States Naval Observatory similarly writes: "Your belief that the half-century will not be over until the end of 1950 is quite correct. This comes about because there was no year zero. The first year of the first century was the year one, and the last year of the first century was the year 100."

And finally Webster's Dictionary gives the following definition of the word "century": "A period of a hundred years . . . specifically one of the hundred-year divisions of the Christian Era; as, the *first century* (A.D. 1-100 inclusive); the *nineteenth century* (A.D. 1801-1900)."

I conclude that we must wait until the end of this year before we can truly say that the half century is ended.
West Newton, Mass.

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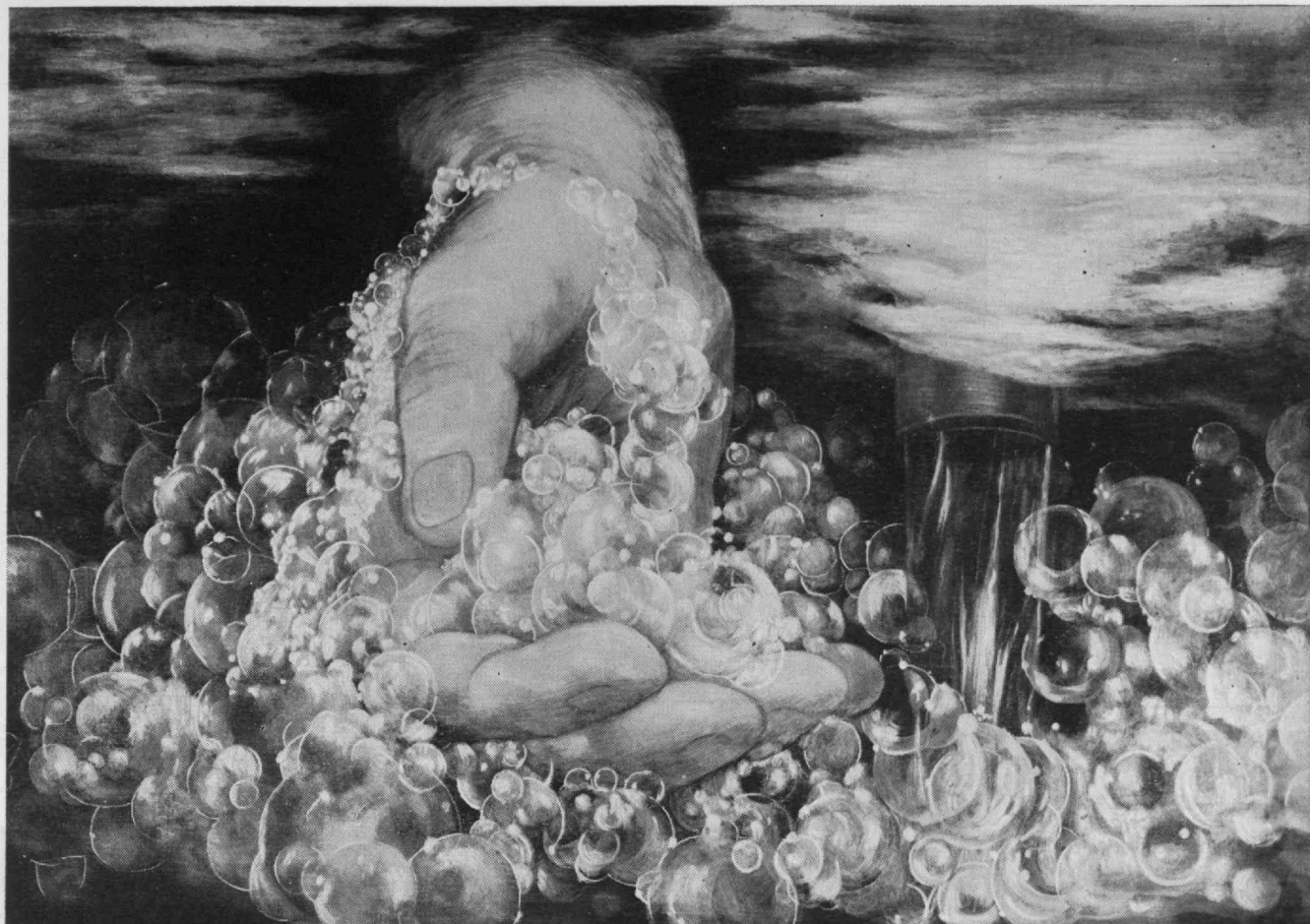
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they are entirely different chemically, and work in a different manner.

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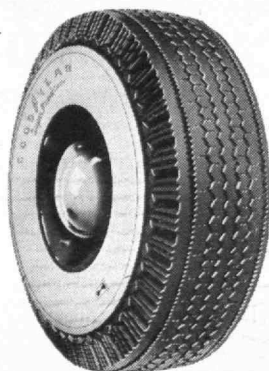
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Doris Wallace from Black Star

THE TECHNOLOGY REVIEW

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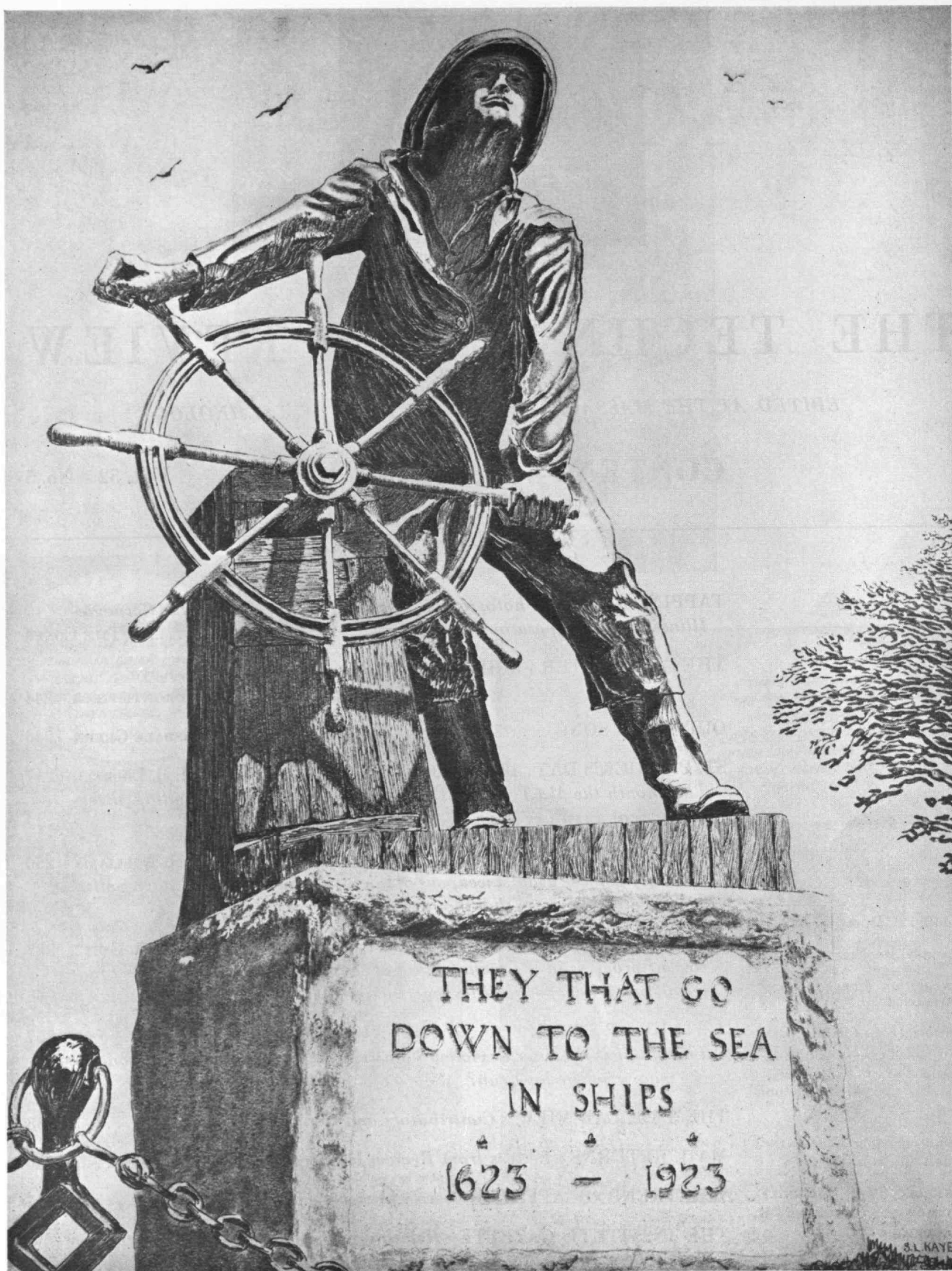
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The Gloucester Fisherman
another in a series of well-known New England scenes
by Sidney L. Kaye, '30

THE TECHNOLOGY REVIEW

Vol. 52, No. 5

March, 1950



The Trend of Affairs

Flotation for Cancer Cells

A TECHNIQUE which promises greater accuracy in searching body fluids for cancer cells, and which greatly reduces the time required for microscopic studies of specimens, has been devised by Dr. Bert L. Vallee, a research associate in the Institute's Department of Biology, and Don W. Fawcett, of the Department of Anatomy, Harvard Medical School. Their research, which has resulted in a notable improvement in one of the most important methods of cancer diagnosis, was carried out in the Vincent Laboratory at the Massachusetts General Hospital, and is reported in the January 13, 1950, issue of *Science*.

Doctors Fawcett and Vallee found that cancer cells are usually less dense than normal cells, and this discovery led them to conclude that there might be a means of separating the two types of cells according to their weight. If body fluids were floated on some liquid of proper specific gravity, the lighter cells should remain on the surface, whereas the other materials should drop to the bottom. This principle has been successfully applied in their new technique.

Ordinarily, under current diagnostic methods, the body fluid is drawn off and spun in a centrifuge at high speed. The residue is then placed on a slide and examined under the microscope. Examination is tedious and time consuming, and often technicians spend 20 minutes or longer looking into microscopes in search of cancer cells.

In the new technique developed by Doctors Vallee and Fawcett, the heavier residue is caused to settle, and the lighter parts, containing cancer-cell concentrations, float on the surface. Through this new technique, a concentration of cancer cells is achieved in the microscopic field by eliminating other structures which interfere with their identification. Using the

new technique, cytologists are able to discern, in less than a minute, cancer cells which they might have spent a great deal of time seeking with conventional methods. It is estimated that by concentrating cancer cells by the new technique, the average technician can do the microscopic examination in about 10 per cent of the time previously required. A substantial increase in accuracy of identification is also achieved.

The present finding is incidental to Dr. Vallee's efforts to ascertain chemical differences between cancerous and normal cells. Three years ago, while at the Harvard Medical School, he, in collaboration with Walter L. Hughes, Jr.,³⁷ used serum albumin to separate the heavier red blood cells from white blood cells. The new technique represents an application of the earlier fundamental finding.

Atomic Energy and the Life Sciences

IN spite of the fact that there has been an extraordinary amount of publicity about the activities of the United States Atomic Energy Commission, it has been very difficult for the average layman to gain a comprehensive idea of its work. This is partly because the military aspects of atomic energy have dwarfed its peacetime applications, and partly because, until now, there has simply been no concise description of its research applications. The book, *Atomic Energy and the Life Sciences* (United States Government Printing Office: United States Atomic Energy Commission, July, 1949. \$0.45) has the advantage of being authoritative, clearly written, and comprehensive in its treatment of the uses of atomic energy in medicine and biology. It describes the nature of the various types of radiation and their effects, and then outlines in a brief way the scope of basic research now under way or contemplated. This research is very active, especially with respect to the effects of radiation on tissues and organs, radiation sickness, the effect of ra-

diation on heredity, and in the application of knowledge of radiation to agricultural research projects.

The problem of how to protect workers in the field of atomic energy is adequately discussed. Agreement concerning procedures in this field is difficult because so little is known about how much radiation the body can absorb without immediate or remote aftereffects. The general principle of keeping the individual's exposure below .05 of a roentgen a day is approved; this leaves a generous factor of safety. The persons charged with administration of such a program of protection have become known as health physicists. There are about 500 persons already in this field, and as radio isotopes are used more and more in universities, hospitals, and industries, the need for health physicists will increase enormously.

Radio isotopes have been particularly useful in the study of biochemical and physiological processes because they can be used as tracers and thus can aid in the understanding of the exceedingly complex chemical and physiological reactions that occur in living tissues. Research under way is designed, therefore, to throw light on the mechanism of anemia, the role of iron and zinc in blood metabolism, electrolytic changes in body fluids, the synthesis of proteins, and diabetic processes. Radio isotopes have also been used in the treatment of thyrotoxicosis, cancer of the thyroid gland, and polycythemia vera. At present, the use of radioactive materials in clinical medicine is very limited, but their potential role appears to be a very large and important one. As side results of these research projects, techniques are being devised to make body measures hitherto impossible, or at best impracticable, such as measurement of total blood volume, total extracellular fluid, total body water or total body sodium. There is a good possibility that one radio isotope, radiophosphorus, may be of value in the location of brain tumors because of the fact that certain tumors concentrate injected radiophosphorus more than does normal tissue.

The role of atomic energy in agricultural research is described, indicating that much new progress may be expected in the field. A description of the different types of particle accelerators will be very useful to the layman who is puzzled by the differences between synchrotrons, cyclotrons, betatrons, and electrostatic accelerators.

As Dr. Alan Gregg points out in his foreword, "The greater man's knowledge of the laws of nature, the more substances he can create that have never actually been found in nature. We can thus not only make completely unfamiliar substances but also release forces that in quality or intensity are not to be found in the natural world. Virtually a second world for study and exploration comes thus into being as a result of profoundly understanding the laws that govern the phenomena of the world about us — the first world we studied and explored."

A study of this small book will do much to help the general reader to understand what the Atomic Energy Commission is doing in addition to making bombs. It will also give him the perspective needed to react intelligently to the political attacks made on those charged with the duty of developing this new source of knowledge and power. — D.L.F.

Our Stein Song

BY LONSDALE GREEN

As many Technology men know, the words to the well-known M.I.T. Stein Song were written by Richard Hovey, a Dartmouth man of the Class of 1885. But not until about 10 years after his graduation, when engaged in literary work in Boston, did he become acquainted with a musician who had a reputation as a composer and who supplied music for his lyrics. That man was Frederic Field Bullard, a member of the Class of 1887 at M.I.T. But Bullard never graduated from the Institute. His first and only love was music and he left the Institute to spend four years in Europe. Years ago, the European stamp of recognition seemed to be indispensable to a musical career in this country. So we next hear of him studying composition and the organ at the Munich Conservatory with Josef Rheinberger. On his return to the city of his birth — Boston — we knew of him as a music teacher and the composer of music for many songs.

But to return to Mr. Hovey, a journalist and dramatist. He did not write "A Stein Song" while at Dartmouth. One of his 12 volumes of poems is entitled *Dartmouth Lyrics*, and in the list of those songs "A Stein Song" is not included. Ten years after his graduation it was first printed in 1895. Hovey was a constant attendant at the Dartmouth alumni reunions which were generally held in Boston, and the drinking song was not for the callow youth of the college but for seasoned Alumni.

We next hear of Bullard as the conductor of the noted Boston Symphony Orchestra. On one occasion the program was entirely composed of his own compositions, including "A Stein Song." Many of his M.I.T. classmates of 1887 attended that recital and joined in the singing. Bullard was a loyal classmate to the Alumni. A few years ago James M. Barker, '07, of the Chicago Technology group, who has a vivid recollection of meeting Bullard, wrote of this event: "When I entered as a freshman in 1903 it was the era of when President Pritchett had started the so-called 'Kommers' at the then Tech Union. Bullard attended some of these and led in the singing of 'A Stein Song' and even after 45 years the memory of his personality still remains with me." My own classmates who lived in, or near, Boston also write in the same interesting vein about Bullard, and M.I.T. has dedicated its *Song Book* to Frederic Field Bullard, '87.

Bullard, born in 1864, died in his 40th year. Hovey himself was also born in 1864 and died in 1900. What a fiend he was for work in his short life. In the well-known volume, Bartlett's *Familiar Quotations*, there are eight excerpts from Hovey's works, and the chorus refrain from "A Stein Song" is included in the list.

Years ago *Colliers* had an article on college songs and quoted "A Stein Song" as the best of the list, but they did not identify it with any particular school.

This year as the 75th anniversary of the Alumni Association of M.I.T. is celebrated, we pause and pay homage again in song to two whose gift to Technology can tangibly be voiced at reunions and Alumni Days to re-create the fellowship of Technology men.

St. Patrick's Day: 1875-1950

An Account of the Founding of the M.I.T. Alumni Association

Written on the Occasion of Its 75th Anniversary

BY H. E. LOBDELL

ST. PATRICK'S DAY of 1875 in Boston — exactly 99 years after Lord Howe's last departing British grenadier sailed away for Halifax — passed off tranquilly under skies that were mostly clear, with no rainfall. By early afternoon the thermometer reached a high of 41 degrees, after which it dropped hour by hour, aided by a blustery March wind, to a midnight low of 19 degrees above. In due course, the local Observer's Office of the Army Signal Corps computed the mean humidity and barometer readings for the day as having been 57.5 and 29.6, respectively.

No robberies, no other crimes of violence, and no scandalous happenings in Boston on this Wednesday, the 17th, achieved subsequent front-page headlines; and but two fires were sufficiently serious to provoke an alarm — a pair of minor blazes: one in the South End "saloon of T. Brady," and the other, quickly extinguished by Hose 3 around 9:00 P.M., in a defective chimney flue of the "dwelling of John Doyle at 180 Cambridge St., loss \$25."

Business on the Stock Exchange was "fair," the prices of bonds "were well sustained," call loans on "good collateral" were to be had at "5 to 6 per cent." The day's shipping intelligence included a statement that "32 East Indiamen, 40 vessels from Cuba, and 40 from European and Mediterranean ports are on the way to Boston." Jordan, Marsh and Company prominently advertised "Spring Importations of Dress Goods," specifying such bargains as "Cashmere de Beiges, at 50 cents. Very Cheap" and "2,000 pieces of Suez Cloths at 37½ cents."

As a fast-growing city of over a quarter of a million (for the 250,266 souls enumerated by the United States Census of 1870 multiplied 44 per cent during the ensuing decade), Boston had a traffic problem, which impelled one irate citizen to write to the *Transcript* characterizing "a blockade of horse cars extending from Temple Place to Castle Street . . . as such an outrage and nuisance." But there were cheering matters to counterbalance: the Water Board for the past two days "entertained no fresh complaints of frozen pipes," and the "attention of hundreds of pedestrians" was attracted applaudingly by the use of steam to clear snow from a downtown street. On this "novelty" the *Transcript* observed: "The hard-packed mass was broken up, piled over an exhaust vent, and the steam turned on full force. It is not necessary to say that the snow was then in a melting mood."

True, in the forenoon of the 17th at the State House there was momentary perturbation, when Governor Gaston declined to review the parade of the "Irish Societies . . . as the procession was made up in part of organizations bearing arms, contrary to the laws."

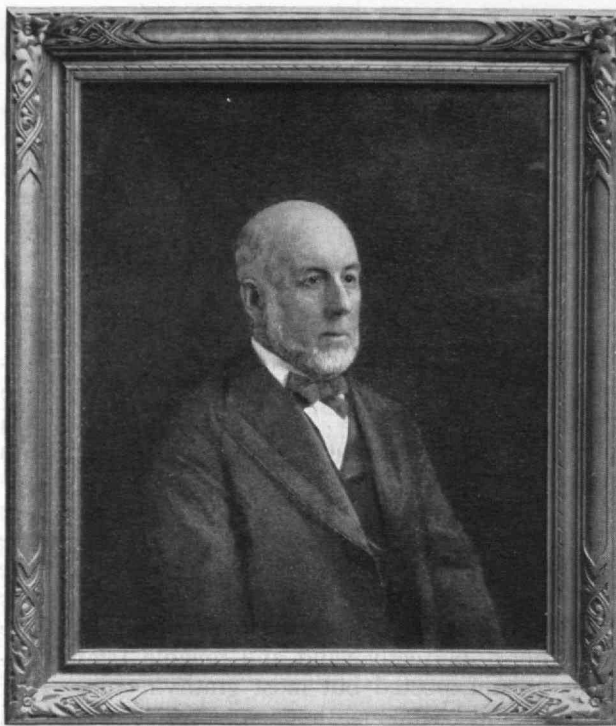
Nevertheless, at 2:00 P.M. the Senate met as appointed, and so did the House where, according to the *Boston Globe*, "business . . . was very heavy, and an immense amount of routine work was gone through with." That evening at the Parker House, His Excellency was "greeted with three hearty cheers" by some 75 persons gathered at "the usual supper" to celebrate the 138th anniversary of the venerable Charitable Irish Society; which no doubt encouraged the *Globe's* editor to conclude in next morning's edition that the Governor's "perfectly valid and tenable [stand] reveals an unexpected but most gratifying degree of firmness and backbone, the lack of which was urged so strongly against him at election time."

Elsewhere in Boston that evening there took place the 10th and last of the season's Symphony concerts; the "Boston Theatre was crowded to the walls" by admirers who came to witness Edwin Booth in *Richieu*; at the Globe another capacity audience enjoyed the "great dual impersonation of Lady Dedlock and Hortense in 'Chesney Wold'" given by Mme. Janauschek, billed as the "Queen of English Tragedy"; and at the Howard Athenaeum there was the customary vaudeville. Also, as noted conspicuously in the next day's *Transcript* by a laconic seven-word, one-sentence item, quoted in its entirety from the head of the middle column on page one: "The Jackson Fishing Club feasted last evening."

Unnoticed, however, by the press of March 18 — (by the *Transcript*, *Globe*, *Advertiser*, *Post*, *Herald*, and *Traveler*) — was a meeting held at 491 Boylston Street, where 23 graduates of the Institute of Technology convened at 7:00 P.M. on March 17, 1875, for the express purpose of perfecting the organization of its Alumni Association.

At the time, the Institute was approaching its legal 14th birthday, but as a "school" it was only 10 years old. The legislative act for its incorporation was approved April 10, 1861, two days before the attack on Fort Sumter; but classroom exercises did not start until less than two months before General Lee's surrender at Appomattox. For it was in his diary under date of February 20, 1865, that William Barton Rogers, President, made the entry: "Organized the School! Fifteen students entered. May this not prove a memorable day!"

The "Preliminary Course of Instruction in the School of Industrial Science of the M.I.T." was conducted during the next four months in temporary quarters at 16 Summer Street, Boston, in No. 1 Mercantile Building, on the north side between Hawley and Arch Streets. It was expected that the "new Institute Building" (which, for convenience will be re-



Charles R. Cross, '70

Professor of Physics at the Institute, and First Secretary of the M.I.T. Alumni Association

ferred to from here on as "Rogers" though it was not officially so-named until after the founder's death in 1882) might be completed by the opening of the academic year 1865-1866. But Rogers required more time, and more money, to finish than had been anticipated and only one of its lecture rooms and but a single laboratory were ready for use by February of 1866.* The next autumn, however, all Institute activities were removed from Summer Street to Boylston Street, to the joy of all concerned. The total registration then was 137, and this increased to 167 for the year 1867-1868.

In June of 1868, the first class, numbering in all 14, was graduated: six in Civil Engineering; six in Mining Engineering; one in Mechanical Engineering; and one in Science and Literature. The latter was Eli Forbes, '68, destined to enjoy a notable career in textile manufacturing and banking until he was well past three score and ten, but who acquired his unique distinction in Institute annals on New Year's Day of

* Plagued by constant financing problems, President Rogers was enabled to proceed with plans to "commence building" through a gift of \$75,000 — the largest so far received — from Dr. William J. Walker of Charlestown on April 21, 1863. Construction began in 1864, the estimated cost of the building and equipment being \$157,000; but when Treasurer John Cummings closed his books "as at May 25, 1866" they showed the actual expenditure had been \$285,159.62.

Meanwhile, Dr. Walker died in April, 1865, "leaving an immense fortune." After providing for certain relatives, and so on, he bequeathed one quarter of the residue of his estate to the Institute — which received from the executors \$100,261 on December 4, 1865; \$40,415 more by June, 1870; and an additional \$56,157.48 over the next 47 years. The final payment, which brought Dr. Walker's total benefactions to the Institute to over \$270,000, was a check for \$664.54 delivered on March 19, 1917.

1865 when, from Lowell as a stripling not yet turned 16, he called in person at the office of President Rogers to enroll — and thus became the first student to enter the first class of M.I.T.

Registration expanded steadily, from 172 in 1868-1869 to 261 in 1871-1872, but in those early days there were many "Special" students and the numbers graduating were small, being for the Classes of 1869 to 1872, respectively, 5, 10, 17, and 12. In June of 1873, however, 26 degrees were awarded (including the Institute's first in Architecture); and in the farsighted faith of this group the idea of having an Alumni Association of M.I.T. found its genesis. In the enthusiastic flush of the first of the annual reunion dinners of the Class of 1873, held at the Parker House on January 23, 1874, George W. Blodgett, '73, moved:

That a committee of three be appointed to consult the classes and students who have graduated from the Institute and see what action they will take, if any, in regard to the formation of an Alumni Association of graduates . . . and report on the matter at the next annual meeting of the class.

His proposal "after a short discussion was adopted," and he, together with William A. Kimball, '73, and Webster Wells, '73, (both also from Course I), were "elected to serve on that committee." From here on for the next twelvemonth, Kimball was the prime mover in carrying forward Blodgett's original idea, although the latter continued active in the affairs of the Alumni Association until his death in 1911. (As an aftermath footnote to another idea of Blodgett's, it was he in 1887, when in charge of signals on the Boston and Albany, who equipped a New York express with electric lights, one of the first American trains to be so illuminated.)

The following October, Kimball addressed a formal questionnaire to ascertain the collective reaction of the 102 graduates (18 having been added to the previous total of 84 by the Class of 1874). The replies indicated a "decided and general wish for an Association of Alumni," and Kimball, consequently, "earnestly requested . . . the graduates . . . to meet at the Institute, on Friday, the 29th of January, 1875, at 2 p.m." At the appointed hour, 27 assembled "in the Physical Lecture Room" of Rogers and chose Robert H. Richards, '68, to act as chairman of the meeting with Kimball as its secretary. Kimball then addressed the chair, according to the minutes which were actually kept by Charles R. Cross, '70:

Before completing our organization, it seems advisable that we should consider why we are to form an association, and the objects that we have in view. I wish to offer a few suggestions, not because my personal opinion is particularly valuable, but as it is the result of the opinions of those who have written to the Committee on the subject, and many of the writers are not here to speak for themselves.

An Alumni Association is more especially desirable for us than it is for college graduates, inasmuch as we do not, like them, further continue our preparation for work by means of law-schools, medical colleges, etc., but at once make a practical use of our Institute training. We naturally, therefore, take a more immediate interest in our Alma Mater and are sooner qualified to estimate the value of her course of study.

It is good that we should regard the pleasure of meeting together socially, but this is not our first object. It seems to me that we owe a duty to Education, to Science in general, and, to the Institute of Technology in particular, that we can only pay by strengthening its hands and increasing its influence in every possible way. This we shall do at once by forming an Alumni Association, and limiting the membership to those who have been endorsed by the degree of the Faculty. We show then that the degree of the Institute means something to us, and we, in some measure discourage the idea, too prevalent in the school, that it makes little difference whether or not a man takes the required course. If we find by experience that the regular courses are not good, let us advise with the authorities — not encourage a disregard of their requirements.

The elder Alumni can also directly benefit the Institute by doing what lies in their power to furnish graduates with work; by recommending them for vacancies where they have influence, and by informing them, through the Secretary of the Association, of such openings as they know of in different parts of the country.

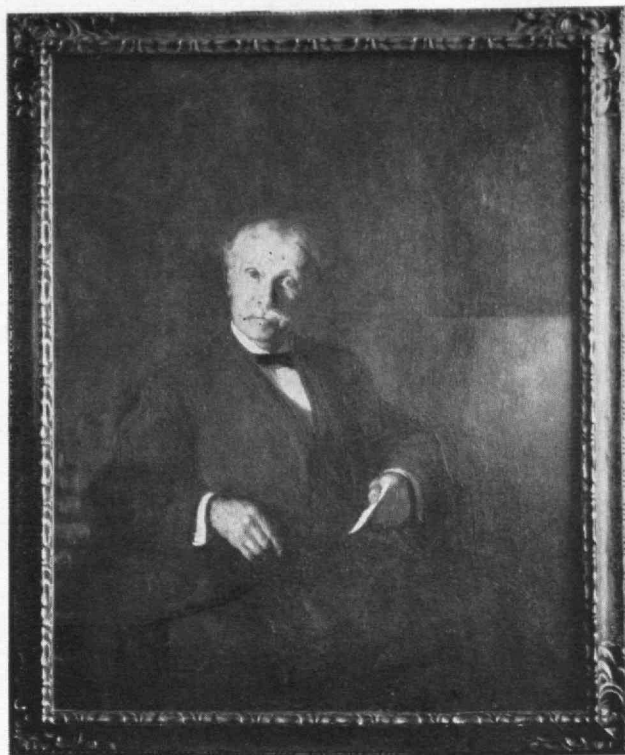
I think, gentlemen, that the Alumni may in future give an immense help to the young graduates in their start in life. In so doing they will assist Progress, they will assist the cause of scientific education, they will furnish a strong motive for young men to go to the Institute of Technology and to do their best while there.

In forming this Association then, and in organizing it, we must keep clearly in mind the fact that we are engaged not so much in a work of pleasure, as of duty, and that our aim is to help on Progress and to advance Science by increasing the efficiency of that school to which we owe so much.

Kimball's keynoting remarks met with a wholly favorable reception except on two counts. The first of the objections was easily resolved by simply recording as "the sense of the meeting that there should be a social entertainment in connection with the yearly meetings of the Association," but the second provoked extended debate. The question was whether membership should be confined exclusively to "graduates," for some present "were in favor of admitting others who had been connected with the Institute." Finally, Kimball's views prevailed in the balloting though not unanimously, the vote being 16 to 8.

Russell H. Curtis, '70, later a member of the Chicago bar, moved that a "Committee of three be appointed by the Chair to draw up a Constitution and call for a future meeting of the Alumni," which motion was carried. Almost at once, however, this action was reconsidered while James P. Tolman, '68, further moved that the "Committee on the Constitution should consist" of Cross, Richards, and Kimball. Tolman's nominations pleased everybody; and adjournment of this meeting was taken.

Less than seven weeks later, on the evening of March 17, Cross and his colleagues made their report, with Richards in the chair and Cross as secretary of the meeting. In the call there had been enclosed a draft constitution of eight articles, and from the meticulous minutes kept by Cross it would seem that most of the 23 persons attending at 7:00 P.M. had come prepared to participate actively in a joint endeavor to improve the draft's phraseology. Edward H. Clark, '70, at the outset did try to get the recommended constitution accepted *in toto*, but his efforts were stifled by a substitute motion that it be taken up article by



Robert H. Richards, '68

One of the founders and First President of the M.I.T. Alumni Association

article. Article I emerged from the ensuing discussion practically unscathed upon a motion by C. Frank Allen, '72; but Article II lost its entire final clause amid an examination of merits and demerits by Allen, Tolman, Clark, Curtis, Albert F. Hall, '68, Daniel W. Willard, '70, and others. As adopted, these two articles read as follows:

I. This Society shall be called the Alumni Association of the M.I.T. Its object shall be to further the well-being of the Institute and its graduates by increasing the interest of members in the school and in each other.

II. All graduates of the M.I.T. shall be entitled to the rights of membership.†

Articles III, IV, and V provoked "warm discussion" but were finally accepted as providing for a president, vice-president, and a secretary, each to be elected for two-year terms. These three "with two other members" were to form an Executive Committee to "look to the general interests of the Association." The duties of the officers were specified as "those commonly appertaining to their offices, and the Secretary shall, in addition, perform the duties of Treasurer." (This latter custom was continued until 1929, when James R. Killian, Jr., '26, became the Association's first elected Treasurer.)

(Continued on page 280)

† Though the question was again agitated in 1882, 1886, 1892, and 1895, it was not until December of 1897 that, upon recommendation of a committee headed by Harry W. Tyler, '84, the document was amended to provide for membership by former students not graduates. Now, on the 75th anniversary of founding, Article I of the constitution stands as follows:

"I. This organization shall be called the Alumni Association of M.I.T. Its object shall be to further the well-being of the Institute by fostering the interest of the Alumni in the Institute and in each other."

THE examination of rocket fundamentals and the application of rockets to warfare logically leads into a discussion of the broader view concerning the shape of future wars. Perhaps the first reaction to the new orders of magnitude presented by the combination of the rocket and atomic power is one of incredulity, but the technological nightmare which any future war will inevitably bring cannot be dispelled by closing one's eyes. All the weapons thus far described can be built, and will be, if they are required. As a matter of fact, most already exist in prototype form. The Germans have shown the world clearly what lies ahead for the peoples of our civilization if war continues. Their A-4's, *Natters*, and *Wasserfalls* provide a lesson which the human race must learn now, for there may be no second chance. It will be too late when the dust of all man's treasures go into the make-up of a universal dust storm.

The Possible Shape of Future Wars

Military personnel throughout the ages have honestly believed that no weapon is decisive, and that for every form of attack there is some defense. This statement may have been true until now, but it is no longer valid. In the guided rocket, the Germans may have had the answer to the heavy bomber, but it came too late to prevent the destruction of their cities. During the interval between the adoption of a new weapon and the use of effective countermeasures, the damage done to the material structure of civilization grows steadily greater and there must come a time, at last, when breakdown occurs. The present state of Germany shows how nearly that point had been reached even with the weapons of the preatomic age.

Official National Military Establishment Photo from Acme



Weapon of the

***The Technological Nightmare Any
Future War Will Inevitably Bring
Cannot Be Dispelled by Closing
Our Eyes to Present Dangers.***

No instrument of war has ever been conceived that lends itself so perfectly to treacherous, unheralded, and possibly overwhelming attack as the rocket. There is a tendency to imagine that the very extent of their devastation would deter an aggressor from using the most powerful weapons of all. So pathetic a belief denies the facts of history, for ruthless men will use any means of warfare that come to hand as long as it promises military victory. By no means does it follow, however, that the new weapons need rely on annihilation to produce decisive results. The combination of rocket and atomic explosive raises the possibility of an entirely new type of warfare — radio-atom warfare.

Reports reveal that the temperature of an atomic bomb is of the order of several million degrees. These reports have emphasized the intolerable brilliance of the explosion, but it is seldom realized that only an infinitesimal fraction of the radiation lies in the visible spectrum at all. By far the greater part of the energy radiated lies around a peak nearly 10 octaves higher, and the total rate of dissipation is about a million million times as great as that from an equal area of the sun's surface. In other words, the atomic bomb acts as an x-ray generator of unimaginable power.

Many of the casualties at Hiroshima were due to radiation alone, and many of the people who were not killed outright were permanently blinded. If bombs are developed for their actinic output, rather than their explosive power, and detonated perhaps 10 miles above the ground, they could interdict enormous areas. No one would dare to venture into the open, if at any moment of the day or night, he might be struck down by a searing blast of radiation. Above all, crops could be blasted with such a weapon and all agricultural processes brought to a standstill. This alone would be enough to decide the outcome of a war.

It is perhaps here, rather than in its more commonly discussed uses, that the long-range rocket presents the most terrifying possibilities. If such a thing can ever exist, here would seem to be the ultimate weapon. It need have no great accuracy, and even if it were intercepted the resulting explosion would be just as effective. A rocket every few hours would prevent outdoor life or movement over perhaps thousands of square miles.

Such attacks might in time assume even more frightening forms. The rockets might be detonated nearer to the ground to induce artificial radioactivity. This would compel the evacuation of the areas affected. Neutron and gamma-ray war heads might be developed against which only great thicknesses of rock could provide protection. The most terrible

Next War—II

The Only Defense against Weapons of the Future Is to Prevent Them from Ever Being Used.

BY M. H. WILLIAMS

threat would be x-ray mutation. This might well cause a people to cease their fighting when normally they would fight to the death against ordinary weapons of their enemy.

Today our reaction to such ideas is one of horrified disbelief, but horror is a singularly ineffective safeguard. The repugnance men once felt for flame throwers and gas warfare did not prevent, or even notably retard, their adoption. Total war is bounded only by the limits of man's material powers, and those limits are rapidly expanding.

What part the Armed Forces, as we know them today, will play in any major war between great powers will depend on how far the technological revolution has advanced. The statement that armies and navies are obsolete is certainly not true today, nor is it likely to be for many years to come. Countries may be defeated by long-range weapons, but they must then be occupied even if there is no land fighting. The great capital ship, the protection of which has become such an increasing burden, has had its demise predicted so often that any further prophecies of doom are apt to be discounted. The carrier-borne fighter has provided the fleet with air cover, and guided missiles may give warships still more effective protection against aircraft. But the long-range rocket will be able to seek out moving targets at least as readily as fixed ones, for no radar camouflage can conceal a battle fleet steaming across an open sea. It is now possible to liberate at a single spot, and in a fraction of a second, enough energy to lift a million-ton fleet vertically a dozen miles. The output of the Hiroshima bomb was of the order of 10,000,000 mile-tons. What effect such forces will have when released beneath the ocean has yet to be seen, for the details of the Bikini test have not been made public, but they must surely spell the end of any relatively compact formations of heavy ships.

Navies will be needed for the transfer of supplies in any conflict in the foreseeable future, but the fear of radar reconnaissance followed by sudden annihilation may force them underseas. The invention of the Walter engine has made this technically possible and any surface craft may be small, high-speed units powered by similar motors. The superseding of heavy guns by precision guided rockets could indeed make large warships unnecessary, since vessels of all sizes but the very smallest would have equal fire power.

An important naval development will probably be the mobile rocket launcher, almost certainly a submersible. Its purpose would be to approach an enemy country and fire long-range rockets at selected targets, perhaps along trajectories that would make

the victim suspect some entirely innocent neighbor. Such a scheme would have an irresistible attraction to certain types of mind. The treachery required involves no more than a straight-line extrapolation through Pearl Harbor.

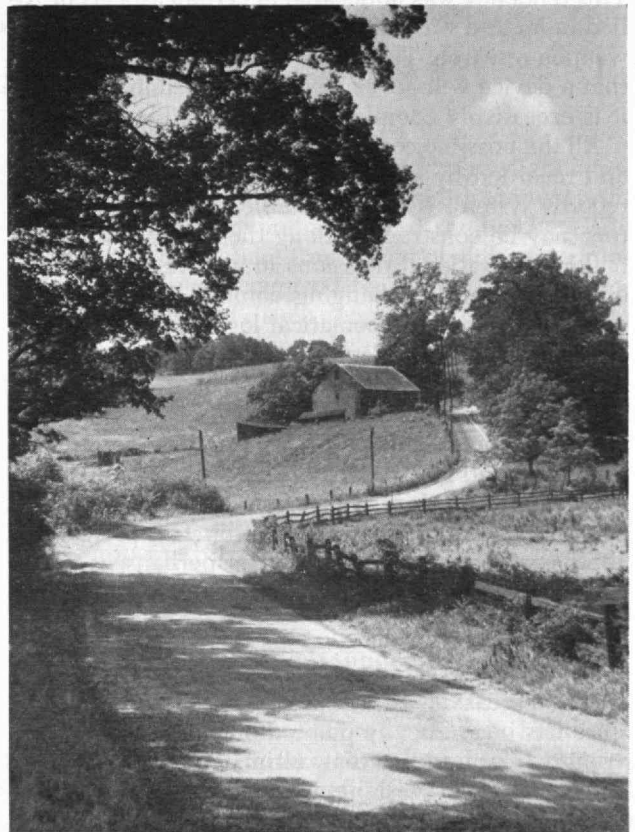
The effect of the new weapons on field armies is more difficult to analyze. Any nation fearing invasion would use its long-range weapons to the utmost against approaching armies, knowing that the opportunity would pass when the battle had been joined. It is difficult to see how any assault could be launched in the face of weapons that have already destroyed 100,000 lives in an instant of time, and it seems more likely that the armies would not, in fact, move forward until the issue had been decided.

Armies will, of course, still be required for many types of fighting. No one imagines that long-range rockets would have assisted greatly in the Burma campaign. But it must not be forgotten that the very existence of the new weapons makes improbable such campaigns as the long struggle for air bases witnessed in the Pacific. Much of the bloody "island hopping" of the Pacific war would have been unnecessary had the Allies possessed the means of delivering bomb loads accurately at that time over ranges of 3,000 miles.

The status of air forces has already been mentioned. For the near future, we can visualize the development of small, high-speed forces for specialized precision bombing, but for the heavy bomber there seems to be no future at all. Not only will it be superseded by more effective methods of attack, but the defense against it appears to be in sight.

Troop and equipment carriers will certainly be needed, perhaps on the largest scale, but they could

Aaron G. Fryer from *Black Star*



only be used in areas where the danger from guided missiles was small, since they would be even more vulnerable than bombers. Once they had landed their matériel, it would at once come under bombardment. Probably these forces would be used to move armies forward when it was clear that the initial long-range attack had been successful.

The fighter, as a defensive weapon, will give way to the guided rocket in the relatively near future. For long-range offense, it may play a considerable part for many years, until automatic and remote controls have reached a very high degree of perfection. But ultimately even here it will be superseded, for there are no limits to what may be done by machines, while there are very definite limits to men's physical powers, in particular to their ability to withstand accelerations. There is also a psychological factor of some importance to be considered in this case. Men, at least normal men, will not risk their lives on dangerous missions when they know that the same operation can be carried out by control personnel sitting in safety before television screens.

Machines Have No Limits

Combat between remotely controlled machines is a possibility but not a very likely one, for such aircraft would rely on their speed to avoid situations where they had to fight. The problem of designing purely automatic, as opposed to remotely controlled, fighters capable of more than holding their own against piloted machines, is one of extreme difficulty but of great technical interest. With any automatic equipment, there comes a stage when further complexity defeats its own end; but often, by the time this point is reached, the designer is unable or unwilling to stop. This tendency was noticeable in certain aspects of Allied radar and was still more prominent in German V-weapon research. Therefore, it should not be assumed that a device will never be developed simply because it is excessively complex or of little military value.

All the possible combat maneuvers can be analyzed and recorded by suitable coding, using the machine-records system. It is conceivable that battle integrators may be constructed along these lines, capable of making operational decisions in a matter of milliseconds according to changing combat conditions. Recent advances in mathematical logic and the calculus of statement, coupled with the rise of operational research, suggest the development of calculators capable of solving both tactical and strategic problems. These machines might be used in conjunction with automatic and guided weapons to wage an altogether new type of warfare which would be too swift and complex for detailed human control. This project, the apotheosis of mechanized war, is perhaps as far as imagination dare go at the present day.

What about the Defense?

This increasing disparity between offense and defense has been already pointed out. It cannot be too strongly emphasized that ultimately, as has been stated in the Washington Declaration, effective defense will be impossible against the weapons that

man's expanding knowledge will put into his hands. The human race will shortly possess the power to interdict surface life over the greater part of the globe and, to quote the Smyth Report on atomic energy, civilization may soon have the means to commit suicide at will. The problem that now confronts us is not one of defense but of survival.

Means of Survival

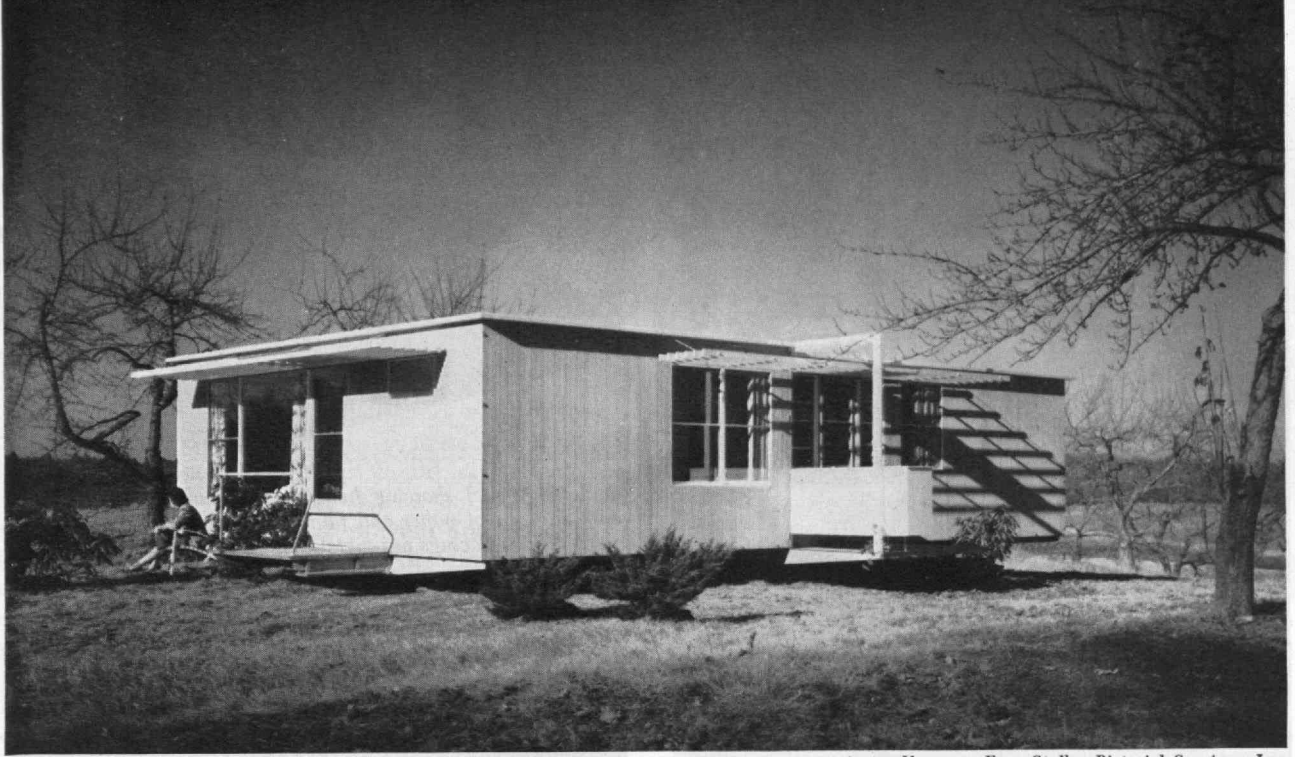
It is often suggested that a war with long-range weapons might result in a stalemate when the contestants had retreated underground beyond the reach of each other's arms. Such a move would appear to be the only answer to the threat of atomic bombs, but it may be doubted whether a highly industrialized civilization could live permanently underground. The prospect is not an attractive one, to say the least, and the difficulty of food production would set a practical limit to the length of time such an existence was possible. Apart from any other considerations, this factor alone would make prolonged warfare with atomic weapons out of the question. Nor does it follow that adequate protection could be obtained by subterranean living. The penetrating power of a rocket from 100 miles altitude or more is enormous and would enable atomic war heads to be exploded at a considerable depth. Such ground-depth charges could collapse or severely damage any cavity that could be built, except through expenditure of an utterly fantastic amount of labor.

Once the location of an underground city or production center has been discovered, it would soon be doomed. Absolute secrecy would be impossible and sooner or later the site would be located, at least approximately. Discovery would be followed by low-altitude reconnaissance with geophysical surveying instruments which would locate the exact position of the cavity. Only in the heart of large mountains could complete safety be guaranteed against the weapons which may be available in another decade.

Moving a Central Government

The British Empire, with its great distances and vast areas of territory is probably the least vulnerable target in the world. On the other hand, the British Isles themselves would be indefensible in the face of long-range attack with atomic weapons. If the defense of the Empire is to be considered in isolation, apart from any other security scheme, the removal to Canada of the central government and the service departments must be carried out as a permanent measure. It would be impossible to do this after a war had started and there would certainly be insufficient prior warning to enable such a vast transfer of administration to be made.

Whether the units of the Empire could retain any degree of co-ordination under the impact of new types of warfare is open to doubt, but in such a matter detailed prediction is impossible. The more closely one examines the problem the more convinced one becomes that security, like peace, is indivisible and that even a political organization as large as the
(Continued on page 278)



Acorn Houses — Ezra Stoller Pictorial Services, Inc.

A completed prefabricated house built with panels of cross-corrugated paper cores faced with plywood. This lightweight house rests on steel beams supported on piers.

Structural Sandwiches

*Stimulated by Military Needs, Rapid Progress Has Been Made
in Laminated Materials for Structures in which Strength
and Light Weight Are Primary Considerations*

BY ALBERT G. H. DIETZ

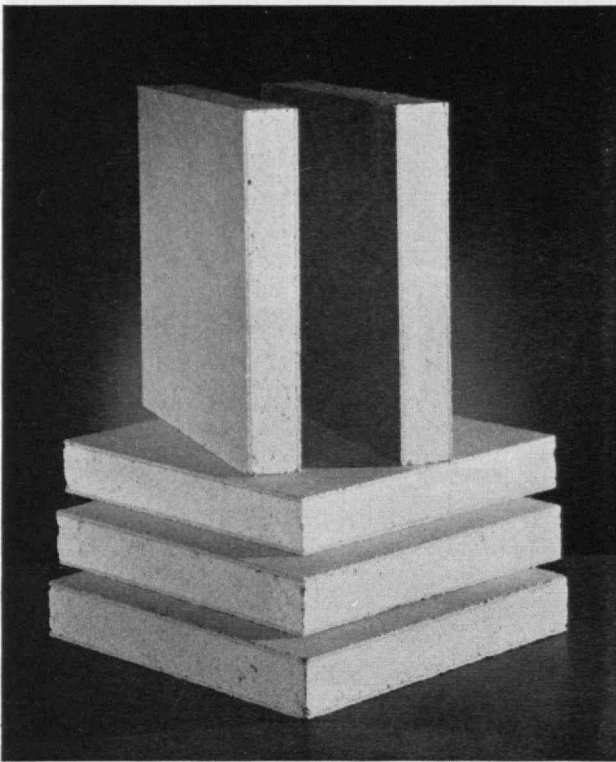
SANDWICHES are said to have originated when the fourth Earl of Sandwich became so engrossed in his card playing that he had meat brought to him between slices of bread so that he could continue his game uninterrupted. The structural sandwiches considered in this article are of quite another type but, like the edible variety, they have been developed to combine in layered structures the properties and characteristic advantages of a number of dissimilar materials to achieve desirable attributes which would not be obtainable in the individual materials.

As usually used in engineering applications, the term sandwich refers to a three-layer material consisting of two thin skins or faces of relatively strong, hard, and heavy material bonded to a thick core of relatively light material which is usually weaker and softer than the face material. A sandwich is distinguished from the more general term "laminated" which may consist of any combination of layers of material. The faces or core of a sandwich very frequently are laminates.

Sandwiches may be designed for many purposes. Combinations of weather-resistant faces and heat-in-

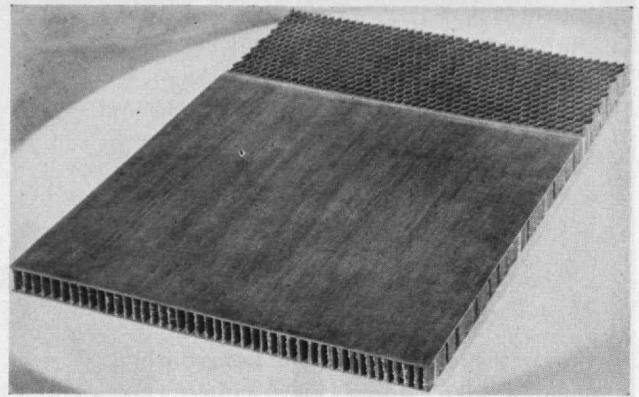
insulating cores, or of strong skins and lightweight cores to obtain lightness, strength, and rigidity are two typical examples of common structural sandwiches. The advantages of combined materials of different properties have been recognized for some time, and isolated examples of such combinations are quite ancient. At the same time, the principal industrial development has come about in relatively recent times, and many of the newest and most promising combinations are still in the development stage. Activity in this field is increasing, and may be expected to continue at an accelerating pace.

Some of the earliest of the structural sandwich materials appeared in the building field when sheets of insulating board were sandwiched between skins or faces of cement-asbestos boards to provide panels having weather-resistant faces and cores of good heat-insulating characteristics. Better heat insulation is provided by such a sandwich, two inches thick, than by the frame construction ordinarily used in buildings. These panels have found wide acceptance as exterior walls, partitions, and roofs of industrial buildings and private homes. During World War II, thousands of



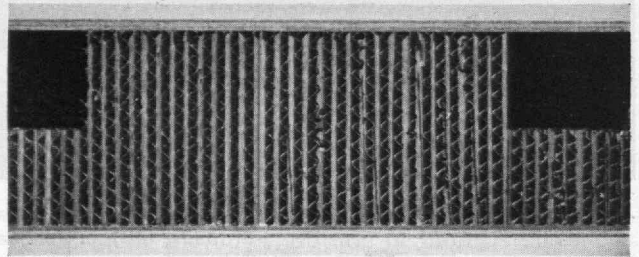
Owens-Illinois

Sandwich consisting of facing of cement-asbestos board and core of expanded calcium silicate. Core and facings are bonded together with synthetic resin adhesives.



United States Plywood Company

Sandwich panel showing honeycomb type of core made of aluminum, or of paper and fabric impregnated with synthetic resin. Facings are metal, plywood, or laminates.



Forest Products Laboratory

Cross section of building sandwich with plywood facings. Core is cross-corrugated paper impregnated and bonded with synthetic resins.

homes were built of this material which also found extensive use in industrial and commercial buildings of all kinds. Another fairly early type of sandwich which is still widely used consists of plywood faced with metal, such as steel, aluminum, or stainless steel. The strength-weight characteristics have made this combination attractive for use in transportation.

Just prior to World War II the interest in sandwich combinations grew rapidly and development work gathered momentum both here and abroad. The war accelerated this trend, especially in the field of aircraft structures. The British Mosquito bomber* represented one of the earliest and most spectacular applications of sandwich structural materials. This type of airplane, largely unarmored, depended heavily upon the speed made possible, to a considerable extent, by the sandwich construction used in fuselage and wings. The sandwich consisted primarily of plywood faces and a light balsa wood core. This construction had been foreshadowed by the British Albatross, built and put into service before World War II.

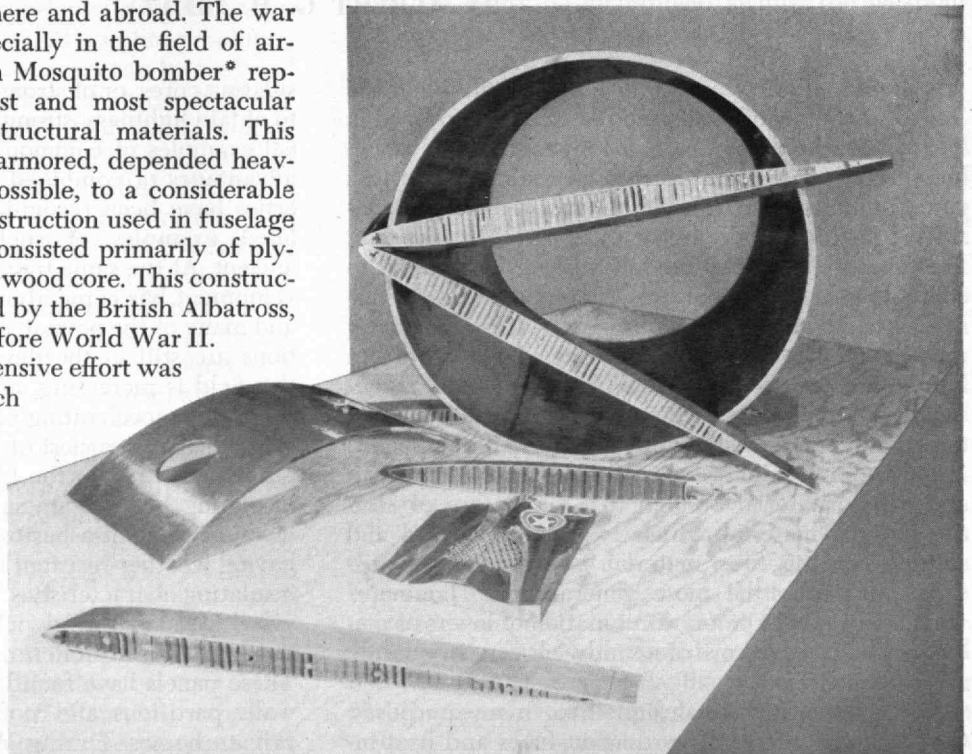
During World War II, intensive effort was put forth to develop sandwich materials for aircraft, for semi-structural and structural applications, as well as for radomes which found important use in housing air-borne radar equipment developed during the war.

Various aircraft components showing honeycomb core and aluminum facings.

Glenn L. Martin Aircraft Company

For structural applications the favorable strength-weight ratio of sandwich materials was especially attractive; so also was the fact that the sandwich was inherently rigid because of its thickness. These desirable characteristics permitted elimination of much of the internal bracing and stiffening necessary for thin metal skins of conventional construction, re-

* The Technology Review, 46:489 (June, 1944).

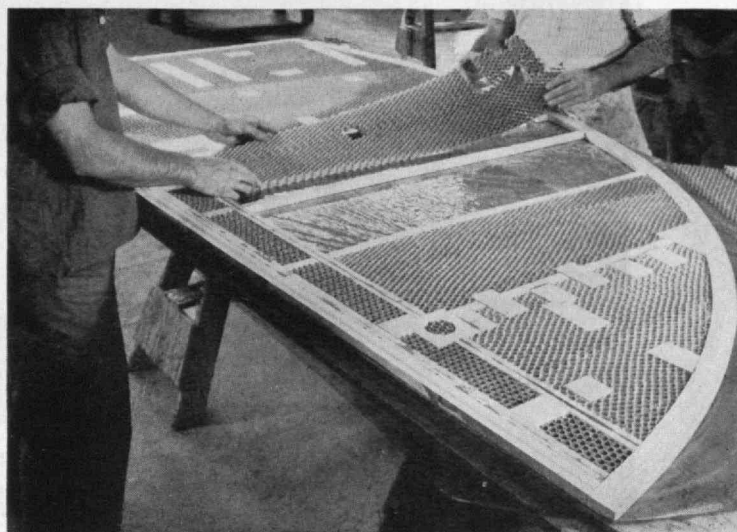


duced the tendency for wing surfaces to buckle or "oil can" during flight, eliminated much of the riveting otherwise necessary, and provided a smooth surface — an important consideration in high-speed flight. In addition to being light and strong enough to withstand air pressure and abrasion, radomes had to be as nearly transparent to radiation as possible. This requirement placed severe restrictions upon the materials that could be used, and imposed rather exacting requirements respecting electrical characteristics and allowable dimensions of the sandwiches.

On aircraft sandwiches, especial effort was directed toward the development of core materials which would be very low in weight yet would have the necessary strength to support the skins against buckling and would be rigid enough to prevent undue deflection under load. Balsa wood, with the grain running parallel or perpendicular to the faces was widely employed. A large number of foamed materials were developed. Foamed rubber, mostly synthetic and based upon a variety of formulations, received intensive development. Foamed plastics, especially cellulose acetate, polystyrene, phenol formaldehyde, urea formaldehyde, polyurethane, and polyesters were made by a variety of methods including mechanical foaming, inclusion of foaming agents, and conversion of reaction by-products into steam. Cellular or grid construction consisting of wood grids or honeycomb-shaped cells composed of resin-impregnated paper, aluminum, cotton fabric, or glass-fiber fabric were developed to a high point. The honeycomb construction, in particular, received considerable attention because the structure of the honeycomb was almost ideally suited to provide the stiffness against buckling and oil-canning of the skins which is a prime requirement in aircraft sandwiches. The size of honeycomb cells could easily be controlled and varied to suit the particular application, and the over-all strength-weight ratio was favorable. Honeycombs were employed in sandwiches for wing and fuselage sections and for such purposes as doors and floors.

For the most part, faces consisted of aluminum, stainless steel, plywood and plastics-based laminates. The latter, in particular, were intensively developed. The glass-fiber fabrics, combined with polyester resins which could be cured at relatively low temperatures and little or no pressure, received special attention since they provided materials of high strength-weight ratios, many of which could be tailored to develop their highest strengths in desired critical directions. They were particularly valuable in radome construction. The older high-pressure, plastics-based laminates received similar development, and, were considerably improved in strength.

Wartime developments have continued into the postwar period, and many of those born under wartime pressure are being evaluated under calmer conditions. Some will undoubtedly be found wanting and will be discarded, but others are proving themselves in actual use and are becoming standard methods of construction for structural, semistructural, and combined usages, such as in radomes which are integral parts of the structure of the aircraft. As their speeds are stepped up, the requirements for aircraft become more and more exacting. Strength must be multiplied



United States Plywood Company

Honeycomb core being placed in aircraft section. Curved edge is laminated wood. Adhesives are synthetic resins.

with a minimum increment in weight. Surface erosion becomes an increasingly serious problem.

During the war period, the established building sandwiches were very widely used in construction, but newer developments were largely held in abeyance. In the postwar years, progress in this field has again gone forward and new combinations are undergoing active development for housing and for commercial or industrial buildings.

An example of the type of sandwich being developed for housing is the combination of waterproof plywood face bonded to a core consisting of honeycomb, or of corrugated paper sheets impregnated with a synthetic resin and laid up with alternate layers at right angles. The resin impregnation imparts stiffness to the paper; it also provides moisture resistance as well as resistance to attack by mildew or vermin. The core stiffens the plywood faces against buckling and provides heat insulation. The stiffened plywood faces carry the loads of floor, roof, walls, and partitions without the need of joists, rafters, or studs. One small house under development, having a living area of 800 square

Erection of building panels consisting of insulating board core and cement-asbestos facings.

Celotex Corporation





Celotex Corporation



Acorn Houses — Ezra Stoller Pictorial Services, Inc.

Industrial building (left) employing sandwich panels consisting of cores of insulating board and facings of cement-asbestos. In the erection of a prefabricated dwelling (right), lightweight construction, through the use of cross-corrugated paper cores and plywood facings, permits full-length sections to be hinged together and erected with light gin poles.

feet, weighs an average of two and a half pounds per square foot of floor, roof, partitions, and walls. The total weight of the shell is 8,000 pounds. The house is built on piers, without foundation walls, and the steel supporting beams for floor and flat roof add another 1,600 pounds. Including all equipment—heating, plumbing, cabinets, and other miscellaneous items—the complete house weighs six and a half tons. Because of the low weight and because of the sandwich construction of the shell, the sections of the house can all be hinged together, folded up on one truck and trailer, transported to the site, unfolded, and erected with light gin poles. Because the partitions and walls, although amply strong, are only two inches thick, the floor plan provides 30 square feet more usable space than would be possible were the same house to use conventional wall and partition construction.

For industrial and commercial building applications, lightweight mineral cores are being developed. Some of these are foamed, like foamed glass, and others are highly porous lightweight minerals like silicates. Expanded mica bonded with various cements is being developed, as are foamed concrete and expanded burnt clay. Faces may be metal (such as aluminum and stainless steel), ceramic materials (such as cement-asbestos board), or thin reinforced concrete slabs. One construction sandwich, which is two inches thick and consists of lightweight silicate core with cement-asbestos faces, has an over-all heat transfer coefficient approximately the same as the wall construction of frame houses. The same core material, made into doors with wood edge strips treated for fire resistance and with untreated face veneers of one twenty-eighth-inch birch and one-sixteenth-inch crossbands, carries a one-hour fire resistance rating.

The sandwiches of cement-asbestos-faced vegetable insulating board, and metal-faced plywood continue to be employed in considerable volume. Closely allied to the latter is the new development of plywood cores faced with resin-impregnated laminated paper. Experimental work is being carried on with cores of insulation board faced with steel sheet as well as with lignocellulose hard boards and similar materials.

A highly critical factor in any sandwich is the bonding agent between the faces and the core. The adhesive must adhere firmly and permanently to two

usually very dissimilar materials. It must withstand the fluctuating stresses set up by the loads on the structure, and also the differential shrinkage and expansion of the core and face caused by changes in temperature or moisture content. Furthermore, the adhesive must be impervious to attack by moisture, mildew, or vermin. Until the advent of the synthetic resin adhesives, and similar high-strength durable bonding agents, this was an almost insurmountable obstacle. It still remains a serious problem but one which is yielding to the advances being made in engineering adhesives. Today, the thermosetting resins, such as phenol formaldehyde, resorcinol formaldehyde, melamine formaldehyde, and urea formaldehyde are widely used. Some of these require heat to effect a cure; others can be catalyzed to cure at room temperatures. Some of the newer formulations incorporate additional agents like polyvinyl butyral to provide a measure of flexibility to the bond. An important adhesive for bonding metal is based upon cyclized rubber. Bituminous cements are used in at least one application to bond cement-asbestos faces to insulating board cores. One of the principal problems remaining to be solved is a simple nondestructive method of determining if a sound bond has been obtained. The problem is similar to that of determining the soundness of a welded joint.

Engineering design of sandwich construction introduces several problems not usually encountered with traditional construction materials. Because the skins are thin, the problem of wrinkling or buckling of the skin must be considered in addition to the behavior of the panel as a whole. Because core and skin are widely different, the properties of the panel as a whole must be considered on the basis of a transformed section and "effective" mechanical properties, such as the modulus of elasticity and the shearing modulus. Deflection caused by shear, usually ignored in engineering calculations, cannot be ignored in sandwiches made of materials which differ widely in physical properties. The problem of local failure under concentrated loads may become fairly complex. The design of fastenings, especially for concentrated loads, often becomes particularly difficult, and especially designed fastenings for use with sandwich materials are being developed by manufacturers.



Photo by Corsini from Standard Oil Co. (N.J.)

A Study of Strikes

*We Need to Recognize that the General Welfare Transcends
the Exclusive Self-Interest of Minority Groups Who
Can Cripple a Highly Industrialized Society*

BY PAUL MEADOWS

THINKING of the inconveniences they suffer from strikes, American consumers can hardly be expected to see that they benefit anybody. When the public is informed by the press, as occasionally happens, of impressive strike-caused losses in man-days, wages, profits, the feeling is apt to develop that "nobody wins a strike." In what sense is a strike ever won or lost? More generally, what are the social and economic meanings of the strike? What is its use and how can it be controlled?

Writing near the turn of the century in a British publication, *Engineering Magazine*, the Englishman Goring¹ expressed much of the indignation and astonishment which a technologically minded person is apt to feel about strikes. "Would any sane Board of Managers," he asked, "attempt to run a railway, or start an electric-lighting plant, or operate a mill or factory, or send a liner to sea, with a mechanical equipment which was certain to break down periodically and lie in inevitable idleness until repairs could be patched up? And yet that is almost an absolute analogy to the status of labour conditions throughout nearly the whole range of such enterprises." If he were alive to-

day, Goring would probably be reaching for a box of empirin tablets. For the statistics on strikes are even more sizable and critical than in his time, as the following table shows.

TABLE I — Labor Disputes in the United States, 1881-1943²

Period	Relative Movement of Disputes (average 1881-1885=100)	
	Disputes	Workers
1881-1885	100	100
1886-1890	266	209
1891-1895	279	221
1896-1900	263	218
1901-1905	549	331
1916-1920*	706	1,098
1921-1925	288	516
1926-1930	148	164
1931-1935	273	501
1936-1940	561	576
1941	812	1,335
1942	562	476
1943	711	1,122

* Data for 1906-1915 not available

In a recent study the Bureau of Labor Statistics has offered an annual breakdown of strikes in this country for the last generation.³ These data show that strikes in the period 1916-1948 have not been less than 600 annually, and have occasionally reached a total of more than 4,000 (in 1917, 1937, 1941, 1944, 1945, 1946). If we sort these years according to the total number of strikes, the following picture emerges.

TABLE II — Frequency of Strikes, by Years 1916-1948

Number of Strikes	Number of Years
Less than 1,000	6
1,000-1,999	7
2,000-2,999	7
3,000-3,999	7
4,000 and over	6

As sizable as these statistics are, they do not tell the whole story about the incidence of strikes by American workingmen. For example, how many of the total number of employed workers were involved in strikes during this period? The amount varies from 0.8 per cent (in 1930) to more than 10 per cent (in 1919, 1945, 1946). Stated in summary form, strikers have annually averaged 7.1 per cent of the total employed labor force. Distributing the percentages, we find the following pattern:

TABLE III — Distribution of Strikes, by Percentage of Total Employed Workers and by Year, 1916-1948

Percentage of Total Employed Workers	Number of Years
Less than 1.0	1
1.0- 4.9	14
5.0- 9.9	15
10.0-14.9	2
15.0 and over	1

Quite obviously, then, strikes in American business and industry have seldom engaged a large section of the labor force, due partly to the fact that even now only about one fourth of American workers belong to union organizations.

Since 1927 the Bureau of Labor Statistics has sought to tabulate a number of aspects of strikes. Arranging these data by periods we find the following distribution:

TABLE IV — Man-days Idle Due to Strikes, 1927-1948

Period	Per Worker involved	Percentage of estimated working time
1927-1930	39.0	0.32
1931-1935	18.8	0.25
1936-1940	14.6	0.23
1941-1945	7.3	0.21
1946-1948	18.8	0.73

Calendarwise, the average strike lasts about three weeks. Distributed by periods the data show the following pattern:

TABLE V — Duration of Strikes, 1927-1948

Period	Average duration (calendar days)
1927-1930	24.7
1931-1935	19.6
1936-1940	22.3
1941-1945	10.1
1946-1948	23.8

The marked decrease during the years of World War II will be quickly noted.

If one turns to a financial calculus of the effects of strikes, he runs into some interesting estimates but he ultimately pushes into a blind alley. Recently the conservative publication *United States News* published estimated wage losses due to strikes since the war for six⁴ of "the hardest hit industries." Their figures are:

TABLE VI — Estimated Wage Losses

Bituminous coal	\$389,000,000
Iron and steel	272,000,000
Automobiles	235,000,000
Transport and utilities	197,000,000
Machinery (except electrical)	197,000,000
Electrical equipment	120,000,000
Total	\$1,410,000,000

Obviously, direct financial losses can be calculated. More difficult is the estimate of losses to the public. The modern industrial economy is a system of interlocking relationships: gains and losses, failures and interruptions are communicated quickly throughout the whole society. This fact prompted the general agreement during the years of World War II to hold strikes in check and to settle differences by other methods. The decline in industrial disputes during that period is noticeable in the foregoing statistics. On the whole, however, developing a yardstick that would measure the losses in general is an almost impossible task. Indeed, one writer⁵ confessed a great many years ago: "Even an exact statement of the time lost through strikes, and the amount of money losses in wages, interest and profits due to stoppage of work, were such a statement possible, would give a very inadequate idea of their real cost to the worker, the employer, and the community in general."

Reading the records of industrial disputes, one feels that the financial assessment of gains and losses must be countered by a symbolic calculus of another sort. Putting the matter bluntly, so far as unionists are concerned the time loss is not to be set against the wage rate gain, for there are group and industrial values which are to them of greater importance. Financial apples and symbolic oranges cannot be compared in any case.

Moreover, in all fairness, losses due to strikes should be compared with losses due to other types of work stoppages. Professors Millis and Montgomery,⁶ well-known specialists in labor problems, have observed: "The time directly lost as a result of industrial disputes is not substantially different from that resulting from disabling industrial injury. The number of days lost through disabling sickness is very much larger and that through unemployment is several

times larger than that directly lost through industrial disputes." On the other hand, management appraisal of losses due to planned interruption in the work situation would stress the wastes due to "feather-bedding," slow-down operations, and other make-work activities. Perhaps the wisest thing to say at this point is that the problems here are so vast and so significant that a scholarly survey, comparable to the famous Hoover Committee report for the American Engineering Council on "Waste in Industry," is more urgently needed now than it was 25 years ago!

One way of describing the situation is to point out that strike-won gains can be a Pyrrhic victory. A very suggestive instance is the technological revolution in printing hastened by the long-drawn-out strike of the newspaper typesetters in Chicago. Industrial disputes undeniably hasten greater mechanization, though just as undeniable is the fact that many other considerations also speed up the process of mechanization. If the problem is limited to success in terms of the objectives of the strike, a rather precise conclusion can be stated. Thus, John I. Griffin⁷ in his scholarly inquiry decided that "the number of strikes that fail or are compromised is greater than the number of successful ones." However, "if the compromised strikes are to be considered as partial victories, then a bare 50% of all strikes have been wholly or in part successful." He noted that over the years the percentage of successful strikes declined (that is, up to 1937).

The Strike as a Symbol

Anyone familiar with the history of American labor disputes knows that their financial aspects constitute only an introduction to an appraisal of their consequences. As we have said, such an assessment overlooks the powerful symbolism of the strike—its human meanings and satisfactions both to labor and to industry. For many human values, often irrational from a purely technological point of view, are usually involved.

This point can best be illustrated by a quotation from a man who was something of a specialist in these matters, Eugene V. Debs.⁸ "No strike," he asserted, "has ever been lost, and there can be no defeat for the labor movement. However disastrous the day of battle has been, it has been worth the price, and only the scars remain to bear testimony that the movement is invincible and that no mortal wound can be inflicted upon it." A similar expression comes from the pen of William Z. Foster,⁹ who led the great steel strike of 1919. "In this great struggle the mill owners may well claim the material victory, but with just as much right the workers can claim the moral victory."

At the other extreme is the often quoted statement by John Kirby, Jr.,¹⁰ as President of the National Association of Manufacturers, in a speech to assembled industrialists

in their convention of 1911. "The American Federation of Labor is engaged in an open warfare against Jesus Christ and His cause. . . ." Somewhere in between these fervent avowals of faith are the rather casual, sophistic reactions of two former American presidents. Calvin Coolidge,¹¹ then Governor of Massachusetts, commented on the Boston police strike: "The present situation should not be called a strike." He regarded it as "a desertion of duty." A similar irony runs through the comment by President Franklin D. Roosevelt concerning striking W.P.A. workers: they did not strike, they merely returned home.

These variations in points of view mirror the range of human sentiments in a strike. After all, the strike is a conflict situation. It is an expression of grievance, a demand for concession. Like the divorce suit, it is a public declaration of private difficulties. And like all human conflicts, it is a creature of human rights: of their denial and affirmation. Both unionists and employers can agree, for different reasons, of course, with labor mediator William M. Leiserson's statement:¹² "Every strike is an invasion of property rights." For the unionists, the strike is a counterattack following an aggression by management against the property rights of labor; for management, the strike is the only transgression of rights worth discussion.

The Strike as a Function

Every drama has its dramaturgy, the strike no less than the stage play. What, then, are the values that enmesh workers and employers in a web of assertion and counterassertion, action and counteraction which collectively we call the strike?

Clearly, the strike is more than work stoppage, for there are many types of work stoppages. The strike is a collective action by a group of employees to express a grievance or enforce a demand. It may occur, and usually does, within the framework of collective bargaining. But some strikes, for example, the recent general strikes in Italy, may have nothing directly to do with the immediate work situation: they are political actions. But in all cases, they represent the use of pressure devices!

(Continued on page 270)

Paul Cohen, '35



THE INSTITUTE GAZETTE

PREPARED IN COLLABORATION WITH THE TECHNOLOGY NEWS SERVICE

Development Fund Reaches $\$8.8 \times 10^6$

A GRANT of \$1,000,000 to M.I.T. by the Campbell Soup Company was announced at the Midwinter Meeting of Alumni in Metropolitan Boston on February 4, by Marshall B. Dalton, '15, general chairman, M.I.T. Development Program. This grant brings the development fund up to a total of \$8,800,000. In reporting the decision of the Campbell Soup Company to make the grant to M.I.T., Mr. Dalton told the 700 Alumni attending their midwinter dinner that James McGowan, Jr., '08, President of the Company, stated that the grant was for the purpose of supporting the Institute's research program in the fields of biology and food technology and in related scientific and engineering subjects. Mr. Dalton further stated:

This grant is an impressive example of the growing conviction on the part of industry that it has both an opportunity and an obligation to support basic research and education in the fields of importance to industry.

The grant of \$1,000,000 is one of a group of industrial grants to the Institute now totaling over \$4,000,000 under a plan whereby the Institute extends to the companies full opportunities to keep abreast of new developments and trends in science and technology.

The amount of this grant duplicates an earlier grant from Alfred P. Sloan, Jr., '95, chairman of the Board of General Motors Corporation, which was announced on Alumni Day last June.

James R. Killian, Jr., '26, President of M.I.T., announced that the Institute had decided to construct a new building to house the Departments of Biology and Food Technology as a part of the M.I.T. Development Program. This building will be named in memory of John Thompson Dorrance, '95, who from 1914 until his death in 1930 was president of the Campbell Soup Company. In making this announcement President Killian added:

The Institute's program in biology as a basic science has been steadily growing in importance and scope, and the new John Thompson Dorrance Laboratory, which this grant-in-aid makes possible, insures our being able to take the next step in the development of the "life" sciences at M.I.T. We have a special opportunity because of our great resources in the physical sciences to bring to bear upon biological problems the resources of the physical sciences such as chemistry and physics. The fields of bio-chemistry and bio-physics have been, and will be, continuing at an accelerated rate to make fundamental advances in our knowledge of living tissue with subsequent benefits to medicine and other fields—to develop new ways to fight human disease and hunger.

Similarly, the applied aspects of biology, or what we call biological engineering, are being developed at the Institute concurrently with the growth of biology, and at the present time this work is represented by the Department of Food Technology. The work of this department deals with nutrition and the improvement, preservation, and distribution of foods.

The Departments of Biology and Food Technology at the Institute are now unable to accept qualified students for their Courses, despite increasing demand for larger numbers of graduates in these fields, because there is not sufficient space to accommodate more than the present enrollment. Both Departments have grown to the limit of their existing facilities. Both have had to decline research opportunities because there is not space to house necessary personnel and equipment. Moreover, the Department of Food Technology is now housed in a temporary wartime building with obvious fire hazards, as well as inadequate and unsatisfactory working facilities.

Thus a new building, in which the programs of the Departments of Biology and Food Technology can both reach full effectiveness, is considered one of the high-priority needs of the Institute. It will give the two Departments a common library and shop facilities. It will provide for the specialized equipment necessary to effective research in both fields. Even more significant than the economies effected by housing the two Departments in one building is the co-operation which would be achieved between members of the two staffs. But most important of all, the new building will provide facilities for more students to meet the increasing demands for their services in the cause of better food and better health throughout the world.

President Killian pointed out that the importance of research in food technology at the Institute lies in its promise of long-range improvements in many standard processed foods. Projects now being carried on indicate that it may soon be possible to preserve perishable products by cathode-ray irradiation without refrigeration, so that they retain their natural flavor and nutritional value. And agricultural and marine products may be used in better forms with more complete utilization of by-products. These developments would enable the world to support a larger population without the famines and malnutrition which occur today, even in such a land of plenty as the United States.

Evidence of the immediate importance of the Department's various studies is the list of its research sponsors. Since the war research in the processing, preservation and transportation of food, and studies in food metabolism, industrial concerns have supported almost the entire research program. This arrangement permits the Institute to contribute in peacetime to the welfare and progress of our country in the same manner as our research provided protection during World War II. Among the many sponsors of the Institute's program are the American Can Company, Dow Chemical Company, The Nestle Company, Nutrition Foundation, Pillsbury Mills, Procter and Gamble, Quaker Oats Company, Standard Brands, United Fruit Company, Wilson and Company, as well as Continental Can Company, on spectroscopic studies in food.

William Hovgaard: 1857-1950

THE death of Professor Emeritus William Hovgaard on January 5 at Summit, N.J., brings to an end a distinguished career during which he made many notable contributions to warship design and construction, and earned for himself an international reputation as a naval architect.

Born in Aarhus, Denmark, he was graduated from the Naval Academy at Copenhagen in 1879 and from the Royal Naval College at Greenwich, England, in 1887. He held the honorary degrees of doctor of engineering from the Polytechnic Institute of Copenhagen and from Stevens Institute of Technology.

Professor Hovgaard joined the staff of the Department of Naval Architecture and Marine Engineering in 1901 as professor of naval design. In 1910 he was made professor of naval design and construction, a post which he held until his retirement in 1933. From 1923 until his retirement he was in charge of the Course in Naval Construction and Engineering. Upon his retirement from the Institute when he was 76 years old, Professor Hovgaard moved to Brooklyn where he established himself as a consulting naval architect to many private concerns and to the Bureau of Yards and Docks of the Navy Department.

In addition to his broad knowledge of naval architecture, Professor Hovgaard was an authority on airships and was called upon as an expert in the investigation of several airship disasters. His achievements in naval architecture brought him many honors, including the gold medal of the British Institute of Naval Architects, the David W. Taylor medal of the Society of Naval Architects and Marine Engineering, and the gold medal of the American Scandinavian Foundation in New York. He was a member of all the leading professional societies associated with naval architecture.

Hayden Library Nears Completion

THE Charles Hayden Memorial Library, located on Memorial Drive between Walker Memorial and the Institute's main group of educational buildings, is gradually being put to its intended use as construction nears completion. As already recorded in *The Review* (January, 1950, page 162) the Library of English and History began operating in its new quarters on November 18, and a portion of the library has been used for Faculty offices since last August.

Another important step was made between terms when most of the technical books and periodicals were transferred from their previous location in the Central Library, under the dome of Building 10, to the new building named in honor of the late Charles Hayden, '90. The new facilities were placed in operation on February 6, coincident with the opening of the new school term.

The new library will not be entirely finished until the late spring, but it is already finding extensive use by students who enjoy its natural light and spaciousness. *The Review* will bring to its readers a description of this new educational addition to M.I.T. facilities as soon as all construction work on the Hayden Library has been completed.

The Vail Library of Electrical Engineering and the library on biology now occupy the space and facilities in Building 10 which were formerly used by the Central Library.

Democratic Process

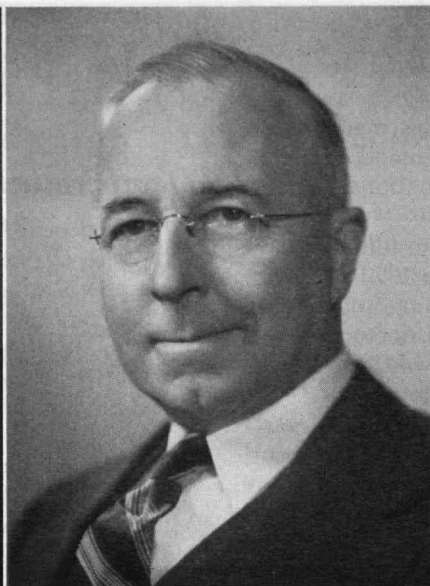
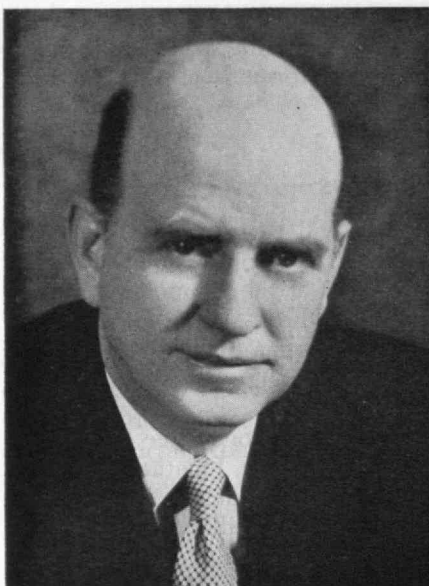
TECHNOLOGY Alumni will carry out an important phase of democracy this spring when they ballot for a new slate of officers of the Alumni Association for the coming year, elect three Alumni for five years as Term Members of the Corporation, and choose representatives from three districts to serve on the National Nominating Committee.

The National Nominating Committee (composed of H. B. Richmond, '14, chairman, Jonathan A. Noyes, '12, Donald B. Webster, '16, Winfield I. McNeill, '17, Minot R. Edwards, '22, John S. Williams, Jr., '22, Harold C. Pearson, '23, Henry C. Gunning, '26, Thomas G. Harvey, '28, and Stephen L. MacDonald, '39) has nominated John A. Lunn, '17, II, for election to the



John A. Lunn, '17

... has been nominated for election to the office of president of the Alumni Association for the coming year. Following his graduation from the Institute, Mr. Lunn became an officer in the United States Army during World War I, after which he spent three years in research in refrigeration. From 1923-1926 he was factory manager of the National Refrigerating Company, and for the next three years was sales engineer of the Winchester Repeating Arms Company. It was during this period that he served as secretary and later as president of the New Haven County M.I.T. Club. Since 1929 he has been with the Dewey and Almy Chemical Company of Cambridge as executive assistant to the president, chief engineer, and now as vice-president. Since 1929 Mr. Lunn has been a club representative on the Alumni Council. From 1945 to 1947 he was a member of the Executive Committee, and for the years 1947 to 1949 was vice-president of the Alumni Association.



Fabian Bachrach

FOR TERM MEMBERSHIP ON THE M.I.T. CORPORATION

Charles A. Thomas, '24

Executive Vice-president, Monsanto Chemical Company, one of principal scientists who developed atomic bomb, and author of standard text in organic chemistry.

C. Adrian Sawyer, Jr., '02

President, Sawyer Construction Company. Member, Executive Committee, Alumni Association, 1932-1934; Vice-president, Alumni Association, 1935-1937; Alumni Council, 1932-1944.

Pierre F. Lavedan, '20

President and Director, The Liquid Carbonic Corporation; President of The M.I.T. Club of Chicago 1947-1948, and serving M.I.T. in the Chicago area as Honorary Secretary.

presidency of the M.I.T. Alumni Association for a term of one year ending on June 30, 1951. Allen Latham, Jr., '30, II, in charge of the Mechanical Development Department of Arthur D. Little, Inc. of Cambridge, and member of the board of directors of the Polaroid Corporation, has been nominated for a two-year term as vice-president of the Association. To serve as members of the Executive Committee for two years, the names of George Warren Smith, '26, XV, and William W. Garth, Jr., '36, XV, will be placed on the ballots to go to Alumni in March. Mr. Smith is the assistant district manager, Organic Chemicals Department of E. I. duPont de Nemours and Company, Inc. in Boston; and Mr. Garth is president and treasurer of Lithomat Corporation in Cambridge, in addition to being a member of the board of directors of the Graphic Arts Research Foundation, Inc.

Nominated for alumni term membership on the M.I.T. Corporation for five-year terms are: C. Adrian Sawyer, Jr., '02, III, President of the Sawyer Construction Company and currently President of the Alumni Association; Pierre F. Lavedan, '20, X, President and Director of the Liquid Carbonic Corporation in Chicago; and Charles A. Thomas, '24, Executive Vice-president of the Monsanto Chemical Company of St. Louis.

New representatives on the National Nominating Committee to be elected this year (one from each district) are: *District 8* — Havana — Antonio H. Rodriguez, '21, X; Knoxville — Albert G. Kern, Jr., '34, I; Monterrey — Ramon F. Munoz, '09, III; New Orleans — John L. Porter, '00, XI; *District 9* — Butte — Walter R. C. Russert, '18, III; Denver — Alfred E. Perlman, '23, XV; *District 10* — Portland, Ore. — Norman N. Rupp, '47, XV; Seattle — Holland H. Houston, '24, VI-A.

Safety in Aviation

SOME of the many problems confronting foreign students who wish to study at the Institute was one topic of discussion at the 272d meeting of the Alumni Council held in the Campus Room of the Graduate House on January 23. Another topic which engrossed Council members was a summary of an important step in advancing the safety and practicability of private flying, given by Professor Otto C. Koppen, '24, of the M.I.T. Department of Aeronautical Engineering.

In opening the business portion of the meeting, C. Adrian Sawyer, Jr., '02, President of the M.I.T. Alumni Association, introduced Saxton W. Fletcher, '18, President of The M.I.T. Club of New York, who was in Cambridge as Council representative for his club. Avery A. Ashdown, '24, master of the Graduate House, then introduced his two guests: Edward A. Ham and Robert V. Whitman, both graduate students at the Institute.

Accepted by a silent rising vote was the resolution on the death of Frank B. Jewett, '03, which was read by Edward L. Moreland, '07, Executive Vice-president of M.I.T., and chairman of the Committee on Resolutions.

Parke D. Appel, '22, chairman of the Committee on Assemblies, reported on final plans for the Boston Midwinter Meeting on February 4, which event is recorded in greater detail on page 263. As another item of business, the slate of officers nominated for the coming year was also presented. Here again the account of the nominations is reported in another portion of this issue (page 261).

In preparation for Alumni Day, 1950, Hugh S. Ferguson, '23, general chairman of Alumni Day, reported

on the progress of plans for this annual event, and nominated chairmen of subcommittees who were then elected by the Council. Subcommittee chairmen thus elected are: *Banquet (and deputy chairman of Alumni Day)*: Allen Latham, Jr., '30; *Ladies' Events*: Mrs. Thomas P. Pitre; *Luncheon*: James Donovan, '28; *Morning Program*: Julius A. Stratton, '23; *Registration*: Wolcott A. Hokanson, Staff; *Symposium*: William W. Garth, Jr., '36; *Transportation*: Emmons J. Whitcomb, '11. Dunbar L. Shanklin, '23, will be assistant to the general chairman.

Paul M. Chalmers, Adviser to Foreign Students at M.I.T., was called upon to speak on problems which arise in admitting foreign students for study at the Institute. With the disruption of higher education by World War II, particularly in Europe, M.I.T. was faced with requests for admission from thousands of foreign students in 1945. At the same time, many returning veterans, in addition to the normal group of preparatory school graduates, were also applying for admission in such quantities that it was obvious that the Institute could accommodate only a fraction of those who wished to study in Cambridge. Accordingly, the enrollment was temporarily expanded to 5,600 students, and it was decided that the proportion of foreign students be kept at about 7 per cent of the total student body — a figure close to that in effect prior to the war. Professor Chalmers pointed out that the residence of foreign students in the United States is limited to their period of study, that such students cannot find normal employment opportunities, and that many applicants do not have adequate financial reserves for several years of study away from their homes. Moreover, the admission of foreign students places the Institute under certain moral responsibilities which do not obtain for American or Canadian students, and for which facilities are limited. Professor Chalmers explained how these special problems, as well as the student's scholastic promise, were always given due consideration in the individual admission applications from foreign students.

President Sawyer then called upon Professor Koppen who spoke on air travel by means of small, privately owned airplanes. Studies at the Harvard Business School had shown that the manufacture and sale of small private airplanes had steadily decreased each year after World War II because of the high cost of the product, the danger associated with private flying, the inconvenient location of airports, and the limited use to which the usual type of private airplane could be put. This study indicated the need for a new type of airplane in which safety and the ability to land and take off on unusually small areas were primary requisites. Professor Koppen then described an airplane of his conception, called the Heliplane, designed to fulfill the requirements established by business factors. The Heliplane is designed to take off in a distance of 100 feet, clearing 50-foot obstacles in 300 feet. It produces no more noise than an automobile, is free from hazards of stall and spin, and has a cruising speed of slightly more than 100 miles per hour, with a landing speed of about 25 to 30 miles per hour. With the aid of slides, Professor Koppen indicated how the Heliplane had been planned to meet the needs of door-to-door private flying.

Midwinter Meeting of Boston Alumni

GATHERING at Walker Memorial for their annual midwinter dinner meeting on Saturday, February 4, Technology Alumni from Metropolitan Boston were treated to a program of unusual interest. First of all came the announcement from Marshall B. Dalton, '15, general chairman of the Committee on Financing Development, that a grant of \$1,000,000 from the Campbell Soup Company brought the development fund to \$8,800,000 as of that date. Next they learned from Karl T. Compton, chairman of the M.I.T. Corporation, that he had returned to M.I.T. full time on February 1 after serving as chairman of the Research and Development Board of the Department of Defense. New plans for the Institute's expansion were outlined by President Killian who took pains to point out that the increased facilities were required to enable the Institute to carry on its teaching and research more effectively rather than to increase the size of its student body. Finally, Larry F. Livingston, manager of the Extension Division of E. I. duPont de Nemours and Company, brought the evening to a close with an entertaining lecture demonstration entitled "Mid-Century Progress in Better Living" in which the advance made possible by individual research in a free enterprise system was emphasized. Orville B. Denison, '11, Vice-president of the Alumni Association, was master of ceremonies at this meeting which had been arranged by Parke D. Appel, '22, chairman of the Committee on Assemblies.

In opening the meeting, Mr. Dalton made the announcement that a grant of \$1,000,000 from the Campbell Soup Company brought the development fund to \$8,800,000 as recorded on page 260.

Of his return to Institute activities after his last service to the nation in Washington, Dr. Compton said:

I am very glad to be back at M.I.T. because I am even more enthusiastic about its future than about its past. Past events, some very recent and others going as far back as the last century, have given ample proof of the value of this type of institution to our country and, in fact, to the world. Experience has shown that this type of institution plays its role in many ways, principal of which is helping young people to equip themselves for successful and useful lives. The trend of affairs is such that the value of technological education will be even more significant in the future. . . .

As I have had opportunity in recent days to renew my touch with Institute affairs, and to learn about the current status of activities and plans, I am greatly impressed by the way in which these are developing under the brilliant leadership of President Killian and by the excellent *esprit de corps* evident at every level. There is no doubt in my mind but that the Institute's affairs are going very well indeed. Not least among the good signs is the evidence which I have encountered in many quarters and in many parts of the country to the effect that the M.I.T. Development Program, led by Alfred P. Sloan, Jr., '95, and Marshall B. Dalton, '15, is not only succeeding in providing the Institute with strengthened financial sinews, but is creating a renewed interest and solidarity among the M.I.T. constituency which will be permanent assets of no mean value.

Taking his first opportunity to address Technology Alumni after his return from Washington, Dr. Compton outlined some of his experiences with the De-

partment of Defense. Particularly significant, Dr. Compton felt, was the fact that there was no major decision, and only one or two minor ones, on which the Board's action was not unanimous. Dr. Compton further stated:

There were, and still are, some very difficult problems. Of those which concern the Research and Development Board I would mention three types: (a) problems involving technical judgment as to probable performance and military effectiveness of new weapons, some of which may be competitive for accomplishing a given military objective; (b) problems inherent in the complexities of the military establishment, especially when trying to unify or co-ordinate policies and procedures which have been embodied in the earlier independent operations of the separate Services — and above all when under the necessity of integrating the entire defense program into the vastly more complex totality of policy and finance of the Federal Government; (c) problems of finding men who are highly competent and available to take the various positions which absolutely must be filled with men of the highest caliber if performance of the requisite caliber is to be given by these various agencies. . . .

Of the three types of problems it is the third, involving man power of high quality, to which organizations like M.I.T. can make major contributions. Here especially, and not exclusively in the technical area, M.I.T. Alumni and staff have a record of which we can justly be very proud. If we are to expect high performance by our governmental agencies, and especially by those which must look largely outside the Civil Service and Governmental Career areas to find the requisite experience and contacts, some way must be found to make temporary service in such positions possible both for the men involved and for the private organizations from which they must be secured. I say this not out of my own experience, because I had no difficulty except with health, but out of my observation of many efforts to secure men for many important positions in the government.

The place of the new John Thompson Dorrance Laboratory in the future of the Institute was touched on by President Killian who gave an able presentation of current plans for expansion of M.I.T. facilities. He said that the existing trend was to use the Institute's property west of Massachusetts Avenue for living quarters and general recreational activities, whereas property east of Massachusetts Avenue would be devoted largely to academic buildings. He pointed out that the new Charles Hayden Library would be open for student use at the beginning of the February term, that the Hydrodynamics Laboratory, the 12,000,000-electron volt electrostatic generator, and the 12-story new Eastgate housing project would probably be completed this year. The new laboratory for the Departments of Biology and Food Technology was planned for erection between Building 8 and the student dormitories, and the Sloan Metal Processing Laboratory for erection on Vassar Street at Massachusetts Avenue, adjoining and connecting with the Guggenheim Aeronautical Laboratory. Also projected was a Faculty Club to be erected, probably in space near Walker Memorial.

Mr. Livingston brought to the 700 assembled Alumni stories of the newest developments in chemical research and their transition from test tube to consumer. The research and commercial development of such products as nylon, cellophane, and scores of

other chemical items were outlined, and a new fiber, "orlon," which is just beginning to find commercial use, was also exhibited.

Science Refresher

SCIENCE Teachers' Fellowships, provided by a grant from the Westinghouse Educational Foundation, will bring 50 high and preparatory school teachers of science to the Institute for six weeks, beginning July 5, 1950. Designed to provide a review of fundamental sciences, as well as a survey of recent scientific advances, the program will include lectures and demonstrations by many prominent members of the M.I.T. Faculty. It will be under the general direction of Professor Francis W. Sears, '20, chairman of the Institute's Summer Program for Science Teachers Committee.

The fellowship program was made possible last year by a grant of \$62,500 from the Westinghouse Educational Foundation. By the terms of this grant, fellowships of \$250 each are provided to 50 science teachers during the summers from 1949 to 1953. The 1950 program is open to science teachers in high and preparatory schools throughout the United States who are college graduates or have equivalent qualifications to carry on the courses.

President Killian described the 1950 Science Teachers Program as a special service designed to help teachers keep pace with, and be qualified to interpret, the developments in science, as follows:

The foresight of the Westinghouse Educational Foundation in establishing this grant makes it possible for the Institute to offer its resources to a group of teachers whose influence in preparing youth for the problems of life is too often unappreciated. The program will bring into close fellowship men and women who have made the teaching of science their career. Their associations during their studies at the Institute will, we hope, send them back to their own classrooms refreshed and stimulated to carry on the important task of guiding their students through the first phase of higher education.

The Westinghouse Educational Foundation was created by the Westinghouse Electric Corporation in 1944 to support educational, scientific, and charitable activities. The Foundation provides funds for scholarships, fellowships, professorships, and other projects in connection with education and educational institutions.

The program will include a review of important concepts in physics and chemistry presented by those in charge of freshman instruction in these subjects at M.I.T., and will cover recent developments in the fields of physics, chemistry, biology, meteorology, geology, and aeronautical engineering. The summer program begins with registration on July 5, and continues through August 11.

Because of the limited number of grants and dormitory facilities available, applications for the program must be received by April 1. Inquiries should be addressed to Professor Sears. Other members of the Summer Program for Science Teachers Committee are George P. Wadsworth, '30, Associate Professor of Mathematics, and Professor Leicester F. Hamilton, '14, of the Department of Chemistry.

(Continued on page 268)

BUSINESS IN MOTION

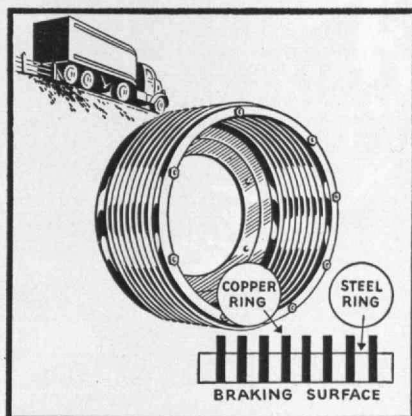
To our Colleagues in American Business...

● Safety is something that concerns us all, whether on the road, in the factory, farm, office, home. Hence Revere takes a considerable amount of satisfaction in a new safe brake drum for heavy trucks, entirely aside from the fact that it contains a sizable amount of copper. This new drum is made of alternate rings or segments of steel and copper, bolted or bonded together. The copper segments project on the outside of the drum, forming fins. There is nothing new about fins on brake drums, but making them of copper is new, so far as we are aware. This use of copper is based on the fact that it is an excellent conductor of heat, far superior to steel in that respect. So good is this manner of dissipating heat that it has been said that new reliability has been brought to the braking of heavy vehicles.

On long hard runs, particularly in hilly and mountainous country, braking sometimes is a problem. As the truck driver puts it, "the brakes fade." This is not due to any trouble with the air or hydraulic systems, but to heat. Brakes that have to hold back 10 tons or more on a down grade get very hot indeed, far over the temperature of boiling water. The steel drums expand when heated to such an extent, so that the brake shoes, which were properly adjusted under cool conditions, are now out of adjustment within the heated drums. The brakes "fade", due to the conversion of kinetic energy into heat. Any way of keeping the brakes cool by removing that heat would be a great contribution to safety and truck operating economy, reasoned the inventor of the new drums. He sought Revere's collaboration, made several sets of drums with built-in copper rings, and had them tried out

on routes passing through the Alleghenies, with their steep and winding roads. Truck drivers came back with reports of the best brakes they had ever handled. One swore he would never drive a truck with any other brake drums. Continued experience showed that not only was fading eliminated, but the drums and linings wore much longer, with 100,000 miles the expected minimum. One Western Pennsylvania truck operator reported 110,000 miles, and on the basis of wear, expects the lining to go 150,000 miles, the drums 250,000.

It is surprising how many favorable side effects have been experienced. Drivers say they can go down steep hills in high instead of low, thus lessening wear on differential, transmission and engine. Running schedules are faster. Equipment spends less time in the shop, more time in revenue-producing mileage. All this and more simply by taking advantage of the heat-conductivity of copper in combination with the strength of steel. This copper-cooled drum is one of those "obvious" ideas which make people remark: "Now why didn't I think of that!"



Ideas help keep our country ticking, but nobody seems to know just how to turn them out on a production-line basis. But this much is known about the generation of ideas: contacts with people and problems will help a lot. Right now you may have a problem which one of your suppliers could help you solve. He might find a new use for an old material, or a new material for a new use, or perhaps put two old materials together, as in this brake drum which "gives the driver the brakes." It might pay you to discuss your troubles fully with your suppliers. They will be delighted to collaborate with you.

REVERE COPPER AND BRASS INCORPORATED

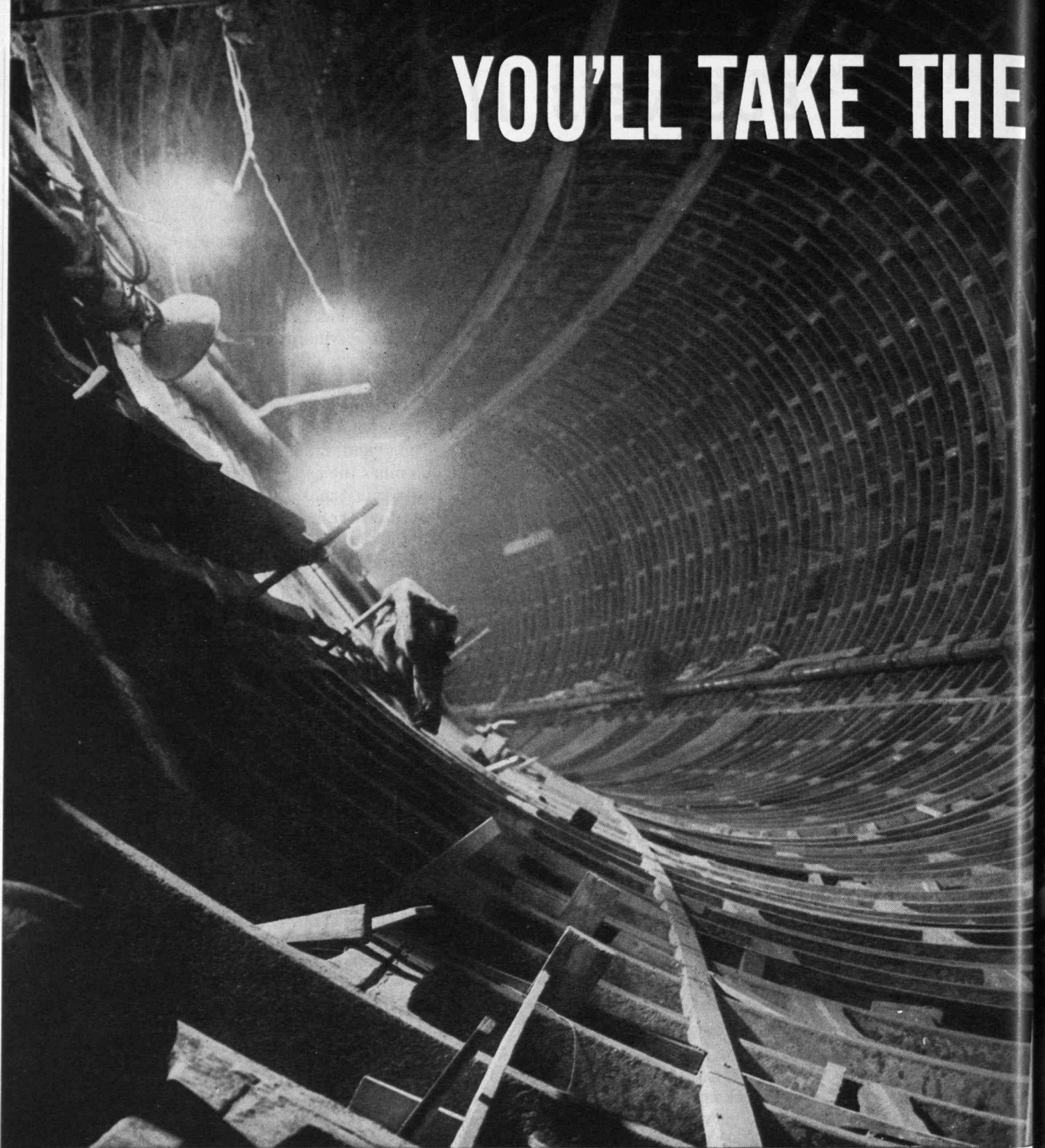
Founded by Paul Revere in 1801

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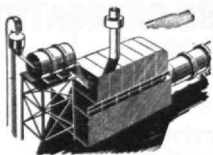
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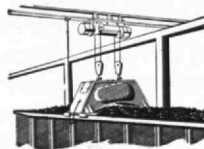


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Physics in Review

PRE-EMINENCE of M.I.T. leadership in physics was amply demonstrated at the 297th meeting of the American Physical Society held in New York from February 2 through February 4, to which Columbia University was the host. During this three-day annual meeting, there were presented a total of 299 technical papers from 88 educational, governmental, and industrial research organizations.

Of the 299 papers listed in the program of this meeting, 22 were offered by members of the Institute's staff and student body. Although these M.I.T. papers were quite generally distributed throughout the broad range of topics covered by the meeting, it is perhaps significant that the highest per cent of Technology participation was in the section on "Reactions of Transmutations; Theories of Elementary Particles," in which four of the 13 papers were presented by Technology staff members.

Technical papers presented at this meeting of the American Physical Society include: "Some Calculations Concerning Neutron-Proton Scattering with Tensor Forces" by Lawrence C. Biedenharn, Jr., '24, research associate in the Department of Physics, and John M. Blatt, of the Division of Industrial Cooperation; "The Range of Tensor Forces and the Theory of H^3 ," by Robert L. Pease, '24, and Herman Feshbach, '42, Associate Professor of Physics; "Relativistic Showers in Nuclear Emulsions (I)" by Louis S. Osborne, research assistant in the Department of Physics, Bernard T. Feld, Assistant Professor of Physics, and Irwin L. Lebow, '48, research assistant in the Department of Physics; "Relativistic Showers in Nuclear Emulsions (II)" by Messrs. Feld, Lebow, and Osborne; "Space Exchange Magnetic Moments in Light Nuclei" by Lawrence Spruch, guest of the Department of Physics; "The Monte-Carlo Method in Quantum Mechanics" by Gilbert W. King, '33, research associate in the Department of Physics; "Energy Levels in N^{15} " by Robert E. Malm, G., and William W. Buechner, '35, Assistant Professor of Physics; "Alpha-Particles from $F^{19}(p,\alpha)O^{16}$ " by Edward N. Strait, Jr., '48, Douglas M. Van Patter, research associates in the Department of Physics, and Professor Buechner; "Factors Influencing the Positions of Nuclear Magnetic Resonances" by William C. Dickinson, research assistant in the Department of Physics; "The Behavior of $BaTiO_3$ Crystals under Hydrostatic Pressure" by Walter J. Merz, of the Division of Industrial Cooperation; "The Electro-Mechanical Coupling of $BaTiO_3$ Single-Domain Crystals" by Max E. Caspari, research assistant in the Department of Electrical Engineering; "Magnetic Resonance Absorption in Magnetite at Low Temperatures" by Lawrence R. Bickford, Jr., '49; "The Theory of Superconductivity" by Laszlo Tisza, Associate Professor of Physics; "Stability Theory of Viscous Flows" by Chia Chiao Lin, Associate Professor of Mathematics; "Studies of Disintegrations by 14-Mev Deuterons" by M. Stanley Livingston, Associate Professor of Phys-

ics, Keith Boyer, research associate in the Department of Physics, Harry E. Gove and John A. Harvey, research assistants in the Department of Physics, and Martin Deutsch, '37, Associate Professor of Physics; "The Energy Spectrum of Protons from (d,p) Reactions" by Keith Boyer; "Angular Distributions of Protons Emitted in Reactions Induced by 14-Mev Deuterons" by Harry E. Gove; "Neutron Binding Energies from (d,p) Reactions" by John A. Harvey; "Centrifugal Distortion in the Formaldehyde Molecule" by Richard B. Lawrance, '40, research associate in the Department of Physics; "Nuclear Models and Nuclear Experiments" by Professor Victor F. Weisskopf of the Department of Physics.

In addition to these papers, two papers from the Institute were included in a program of seven papers comprising a Symposium on Dielectrics, of the American Institute of Electrical Engineers held in New York in conjunction with the meeting of the American Physical Society. They were: "Dielectrics in Electrical Engineering" by Professor Arthur R. von Hippel of the Department of Electrical Engineering, and "Structure and Polarization of Atoms and Molecules" by Professor John C. Slater of the Department of Physics.

Other research organizations which contributed 10 or more papers to these meetings include Columbia University, Harvard University, National Bureau of Standards, Princeton University, Yale University, the University of Chicago, and the Brookhaven National Laboratory.

Synchrotron in Operation

THE Institute's 300-million-volt synchrotron, which will be used for research on atomic particles, has passed its first operating tests in the Laboratory for Nuclear Science and Engineering. Announcement of the completion of the synchrotron, which was started in 1946, was made in the middle of January by Professor Jerrold R. Zacharias, Director of the Laboratory. In commenting on the new research tool, he said:

It is definitely known that many nuclear processes which we do not yet understand occur in cosmic-ray phenomena which reach energies as high as trillions of volts. Some of these processes have not yet been duplicated in man's laboratories. Of special and immediate interest are the particles called mesons.

The Institute's synchrotron is powerful enough to produce mesons artificially and it should produce enough of them so that we can carefully study their behavior.* From such studies may come much new information in the realm of nuclear physics. Eventually, understanding of the meson may disclose the true nature of the strongest forces known to science — those that bind together the particles of the atomic nucleus.

The synchrotron may be compared to a giant slingshot. Its electrons have enough energy to produce nuclear mesons, particles which, until recently, have been observed only in collisions of cosmic rays. It will draw its energy from one of the largest banks of capacitors in the world. Structurally, the synchrotron is a circular doughnut-shaped machine approximately 12 feet in diameter. Its magnet consists of 24 sections

(Concluded on page 277)

* Meson tracks have already been photographed.

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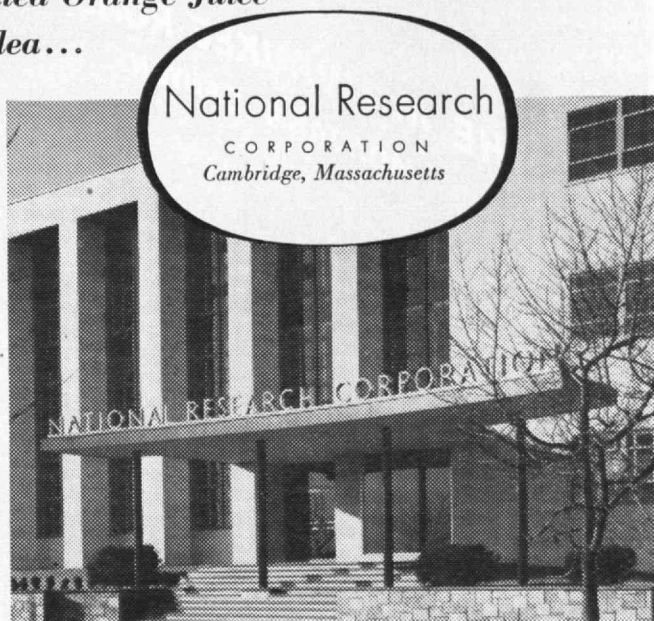
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STUDY OF STRIKES

(Continued from page 259)

They may be sorted into five major types, according to function: negotiatory, supportive, protestive, competitive, and exploitive. Negotiatory strikes are intended to bring pressure either to secure an interpretation of a contract or to force negotiation of one. There are many subvarieties of such strikes: sit-down, slow-down, quickie, outlaw, walkout, and so forth. Supportive strikes are called by one union or group of unions in sympathy with another, to which they may be functionally related — as in the building trades. Protestive strikes operate outside the framework of collective bargaining ordinarily (though not necessarily: for example, the famous Minneapolis general strike). Here belong the political strike (as in the case of the National Maritime Union striking against delays in bringing back overseas servicemen), and the demonstration strike (as in the case of those occurring in western Europe against the Marshall Plan). Again, there are the competitive strikes, arising out of jurisdictional disputes between rival unions. Finally, there are the exploitive strikes by racketeering labor leaders.

It should be apparent, then, that any appraisal of the success or failure of a strike must first consider its function. Glancing back over the varieties listed above, one notes that in every instance the strike is a symptom of fundamental failure: the failure of union leadership (as in the racketeering and jurisdictional

as well as in the outlaw strikes); the failure of the bargaining process (as in the negotiatory and supportive strikes); and failure in the whole social-political system (as in the protestive strikes). The strike is, therefore, an index of disorganization, by no means always induced by either industry or labor. If this be true, then the elimination of strikes would not at all eliminate the disorganization of which the strike is a symptom in the world of today.

The character of the disorganization from which strikes grow may be seen in the many attempts to isolate their causes. The half-dozen scholarly studies of this particular problem point uniformly to five different factors with which the frequency of strikes is correlated.¹³ These factors include: the business cycle, unionization, union ideology, management, policy, and the efficiency of accommodative machinery. Simply stated, these correlations appear to the author somewhat as follows.

The rate of strikes varies directly with the business cycle when prices are rising, inversely when prices are moving downward. Union workers are much more likely to strike than nonunion workers, and industries having had a long experience with unions have a high level of strikes. Unions vary in their policies. Paternalistic (or company) unions do not strike at all, liberalistic (or business) unions at times, revolutionary unions (like the old Independent Workers of the World, hardly cease striking.¹⁴ Belligerent management is badgered by strikes; negotiating management

(Continued on page 272)



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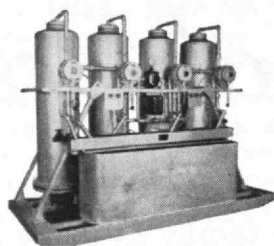
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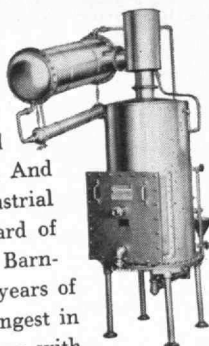


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STUDY OF STRIKES

(Continued from page 270)

has few or none. Finally, adequate accommodative legislation and agencies can greatly reduce the incidence and shorten the duration of strikes, as the reports of the mediation, conciliation, and arbitration services have abundantly corroborated.

Strikes are collective attempts to force recognition and settlement of issues. Sometimes the issues are greatly aggravated by conditions over which neither management nor labor has any direct control, as in an inflationary price rise. Sometimes the issues are fictitious and exploitive, as in the case of a racketeering union. Often the issues are deeply rooted in irrational situations, and the strike is a symptom of that irrationality, as in some outlaw or walkout strikes. Again, the issues may be linked up with systematic ideologies, as in communism and in vitriolic, labor-hating management. Most commonly, the issues represent contrary interests, or semantic blockages, or even competitive jockeying for preferential bargaining position. But whatever the strike, the important thing is the issue. Issues can be pooh-poohed, outlawed, or ignored. But they cannot be solved that way. In so far as they are recognized, they achieve a measure of success for strikers.

However, it is not good for either the financial or the psychological economy of industry and labor to rest industrial relations upon so volatile and explosive a foundation as the strike. Statesmen in both industrial and labor circles acknowledge this fact. Many years ago in a statement that voices the feelings of enlightened employers as well as of unionists, Samuel Gompers said: "Language fails me to express how earnest are the organized laborers in their desire to avoid and to reduce the number of strikes." What is needed to give form and permanence to such an expression of earnestness?

The Strike as a Policy

The public reaction to such talk seems to be that it is not enough to trust the good intentions of such earnestness, whether they come from labor or from management. Increasingly the general tendency is to pass legislation curbing strikes: to prohibit or postpone or penalize or regulate them. Unfortunately, such legislation is often passed in a period of public indigna-

(Continued on page 274)

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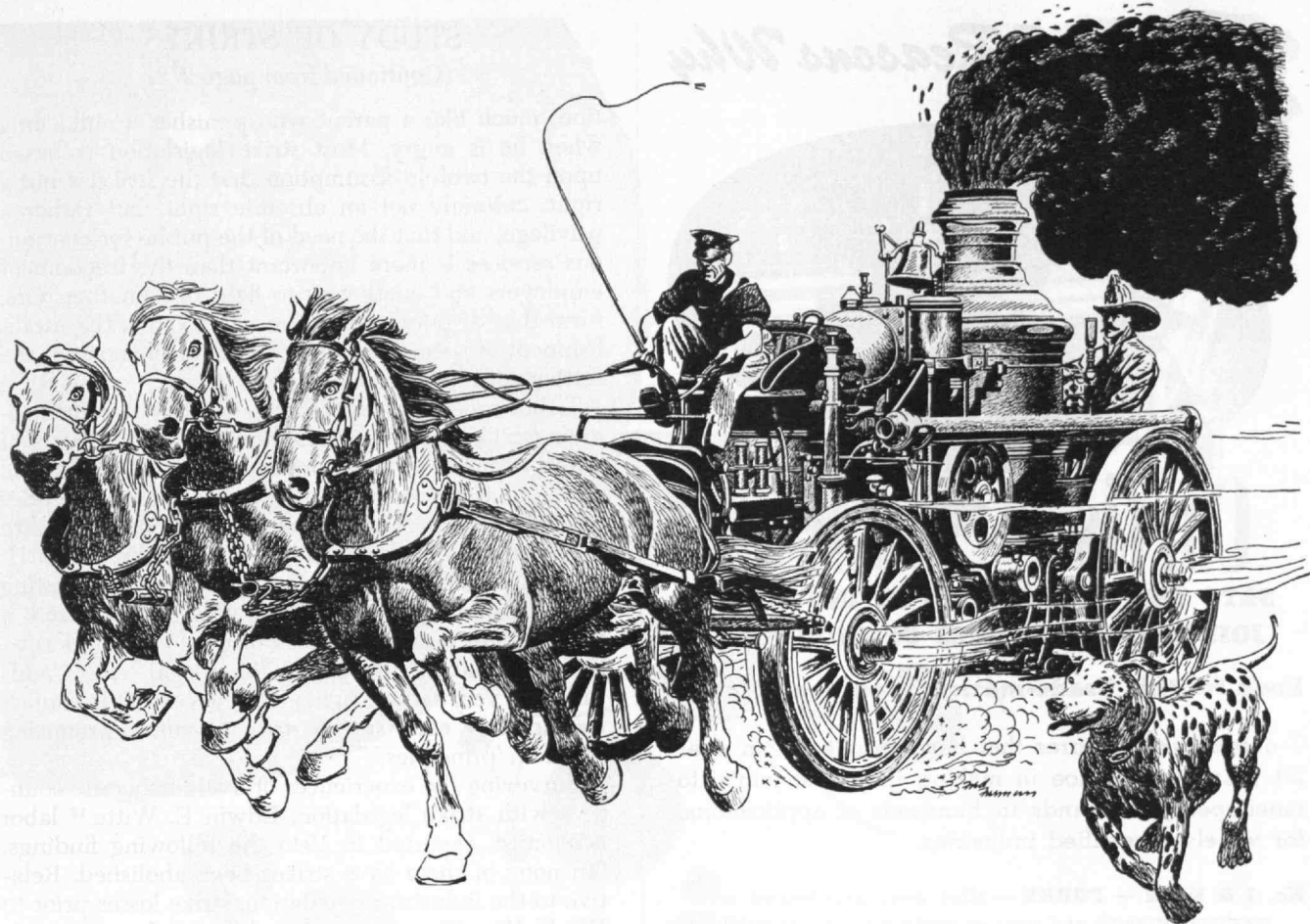
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STUDY OF STRIKES

(Continued from page 272)

tion, much like a parent who punishes a child only when he is angry. Most strike legislation is based upon the twofold assumption that the strike is not a right, certainly not an absolute right, but rather a privilege, and that the need of the public for continuous services is more important than the freedom of employers and employees to fight one another. One form that disputes legislation has taken is the establishment of special accommodative machinery for the settlement of differences.

Labor specialists view such policies with some misgivings. Thus, Professor Leiserson,¹⁵ on the basis of much experience in labor disputes, holds that "the mere fact that there is a board to investigate or render opinions is not enough to compose differences and to avoid or settle strikes." In like manner, Frederick H. Harbison,¹⁶ industrial relations specialist, commenting on the legal definition of rights, observes: "There is a tendency to ensure *responsibility* in industrial relations by making *irresponsibility* illegal." He¹⁷ adds that "the very talk of rights often accentuates conflict by inducing each side to take an uncompromising stand on 'principles.'"

Surveying the experiences of five democratic countries with strike legislation, Edwin E. Witte,¹⁸ labor economist, reported in 1946 the following findings. "In none of them have strikes been abolished. Relative to the industrial population, strike losses prior to World War II were not very different from those in the United States. During the war the record in this country was at least as good as in these foreign countries. Since the close of hostilities most of them have likewise experienced an increase in strikes, but there has been far less panicky concern about the situation than has developed in the United States."

If the foregoing analyses are correct, we must fall back on the rather commonplace observation that the solution of the problem of strikes, like the solution of international war, lies not in their outlawry but in the daily group-to-group relations of management and labor. To be sure, a body of regulatory and supportive legislation — what Sumner H. Slichter has aptly called "industrial jurisprudence" — must be given opportunity to mature. But even more necessary is the emergence and perfection of mutual accommodations between industry and labor. There is little reason to

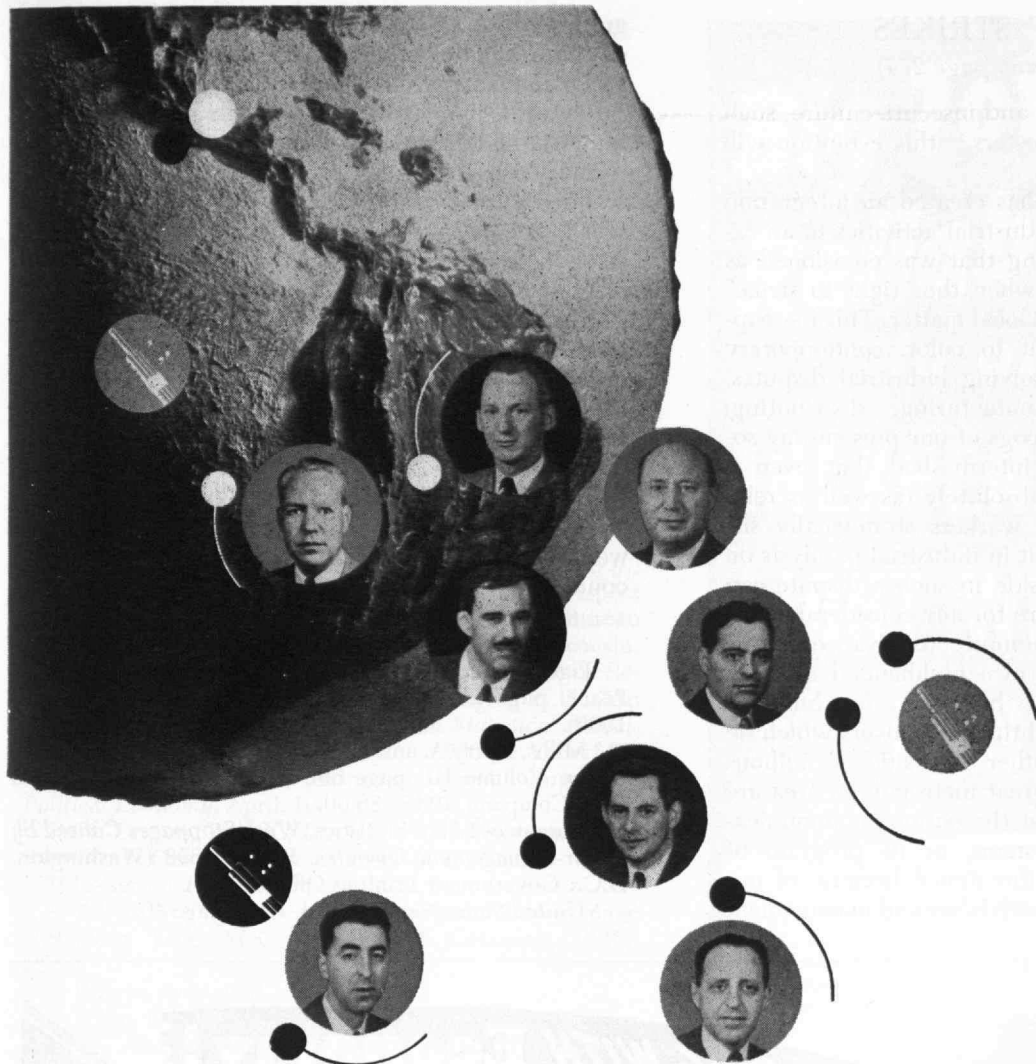
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STUDY OF STRIKES

(Continued from page 274)

expect that in a repressive and insecure culture, such as modern industrialism fosters,¹⁹ this evolution will be painless or rapid.

Technological progress has created an integration and interdependence of industrial activities to an extent vastly beyond anything that was envisioned as recently as 50 years ago when the "right to strike" could still be regarded as a local matter. This inescapable fact colors, or ought to color, contemporary thinking on methods of solving industrial disputes. The administrative, manufacturing, distributing, maintenance, and service cogs of our present-day society are so completely intermeshed that even a minor dispute, involving absolutely (as well as relatively) small numbers of workers strategically situated, can now easily result in industrial paralysis on a national scale. Neither side in such a dispute can disregard the public welfare for any considerable period of time, and expect immunity, to advance its specialized and narrow aims in a highhanded manner. For example, disagreements between a few hundred transportation workers and their employers which tie up the flow of food and other necessities to millions of "noncombatants" in a great metropolitan area are socially unacceptable. That the nation's communication or transportation systems, or its program of national security, can be threatened because of unwillingness or inability of both labor and management

groups to recognize the fairness and reasonableness of the desires of others, represents a severe case of social immaturity. The public interest, welfare, and safety are of far greater concern than exclusive self-interests of minorities and must ultimately be given primary consideration. This stage of development was reached during World War II. But as our social system becomes increasingly complex, recognition that the general welfare has a claim far beyond personal, or group, desires becomes increasingly imperative.

Near the close of World War II, Herbert Hoover,²⁰ then Secretary, wrote: "It is idle to argue that there are no conflicts of interest between the employer and the employee. "But," added Mr. Hoover, "there are wide areas of activity in which their interests should coincide, and it is a part of statesmanship on both sides to organize this identity in order to limit the area of conflict." Conscientiously pursued, such a policy would mean a distinct gain for all parties to industrial conflict.

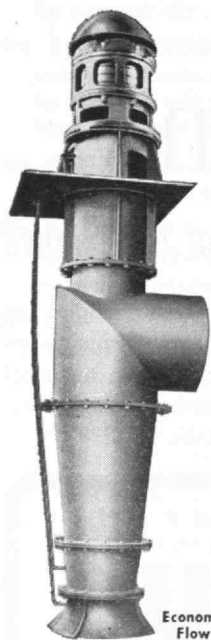
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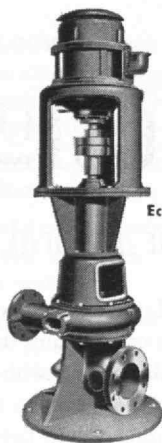
²Millis, Harry A. and Montgomery, Royal E., *Organized Labor*, Volume III, page 692 (New York: McGraw-Hill Book Company, 1945), \$6.00.

³Bureau of Labor Statistics, *Work Stoppages Caused by Labor-Management Disputes*, Bulletin 693 (Washington, D.C.: Government Printing Office, 1949).

⁴*United States News*, June 4, 1948, page 40.



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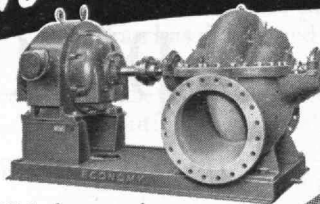
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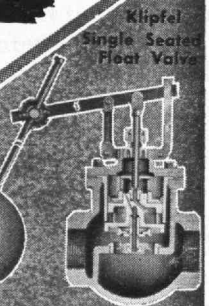
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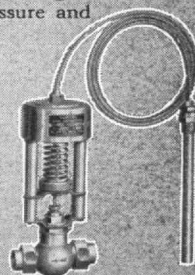
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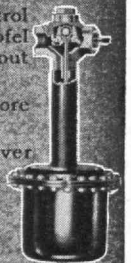
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⁵ Whitney, E. L., "Cost of Strikes," *Monthly Labor Review*, XI:593 (1920).

⁶ Millis and Montgomery, *opus cited*, page 705.

⁷ Griffin, John I., *Strikes: A Study in Quantitative Economics*, page 54 (New York: Columbia University Press, 1939), \$4.00.

⁸ Debs, Eugene V., *Unionism and Socialism*, page 12 (Terre Haute, 1904).

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¹⁰ Cited in U.S. Congress, Senate Committee on Education and Labor, *Hearings*, March 2-3, 1938, Part 17, page 7547.

¹¹ Ziskind, David, *One Thousand Strikes of Government Employees* (New York: Columbia University Press, 1940), \$3.00.

¹² Leiserson, William M., *Right and Wrong in Labor Relations*, page 55 (Berkeley: University of California Press, 1938), \$1.00.

¹³ Cf. Millis and Montgomery, *opus cited*, pages 699 ff.; Griffin, *opus cited*; Huebner, G. G., "The Statistical Aspect of Strikes," Twelfth Biennial Report, 1905-1906, Bureau of Labor and Industrial Relations Statistics of Wisconsin; Hansen, A. H., "Cycles of Strikes," *American Economic Review*, December, 1921, pages 618 ff.; Douglas, P. H., "An Analysis of Strike Statistics," *American Statistical Association Journal*, September, 1923, pages 866 ff.; Yoder, D., "Economic Changes and Industrial Unrest," *Journal of Political Economy*, April, 1940, pages 223 ff.

¹⁴ Cf. Crosser, Paul K., *Ideologies and American Labor* (New York: Oxford University Press, 1941), \$2.50.

¹⁵ Leiserson, *opus cited*, page 74.

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¹⁸ Witte, Edwin E., "Experience with Strike Legislation Abroad," *American Academy Annals*, 284:145 (November, 1946).

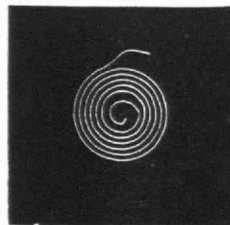
¹⁹ Cf. Meadows, Paul, *The Culture of Industrial Man* (Lincoln: University of Nebraska Press, 1950), \$3.75.

²⁰ *Industrial Management*, April, 1921, page 225; Fitch, John A., *The Causes of Industrial Unrest*, page 361 (New York: Harper and Brothers, 1924), \$3.00.

THE INSTITUTE GAZETTE

(Concluded from page 268)

which fit together like the segments of a pie. Holes through the center of each section form a round, tunnellike path and around this path the whirling electrons are whipped up to their 300-million-volts energy in five thousandths of a second.



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NEXT WAR'S WEAPON

(Continued from page 252)

Commonwealth could not hope to survive by its own efforts. One returns again to the conclusion that the only defense against the weapons of the future is to prevent them from ever being used. In other words, the problem is political and not military at all. A country's armed forces can no longer defend it. The most they can promise is the destruction of the attacker.

In such circumstances the statement that the United Nations Organization is the last hope of mankind is literally and terribly true. It is, therefore, necessary to consider in what way the rocket can be used as an instrument of world, rather than regional, security for mankind.

Rockets as Instruments for World Security

Now that the world possesses rockets and atomic bombs, mankind has a tendency to discount the weapons of which it was so terrified a few years ago. Therefore, even if there is no intention of using them except as a last resort, the World Security Council should, for psychological reasons, possess long-range atomic rockets. However, the weapons which it would use if force proved necessary would be the air contingents of its members, employing ordinary explosives and machines of the type that exist today. Behind these would be the threat, never materializing save in dire emergency, of the mightier forces against which there could be no defense.

No more than 20 launching sites with interlocking circles of fire should be sufficient to give world coverage. The sites would be on mountains, for the reasons already mentioned, and would be staffed by men drawn from every nation. It would be the aim to inculcate in these men a supranational outlook. This is by no means impossible, even today, as the International Red Cross has shown, and this point of view is becoming more widespread in spite of superficial appearances to the contrary. The fact that the personnel required would be largely scientific would assist the realization of this aim. These launching sites would have to be supported by a research organization of such a caliber that no individual nation could hope to match it. This body might in time act as the nucleus around which the scientific service of the World State would form, perhaps, many years in advance of its political realization.

(Concluded on page 280)

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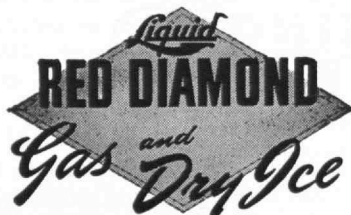
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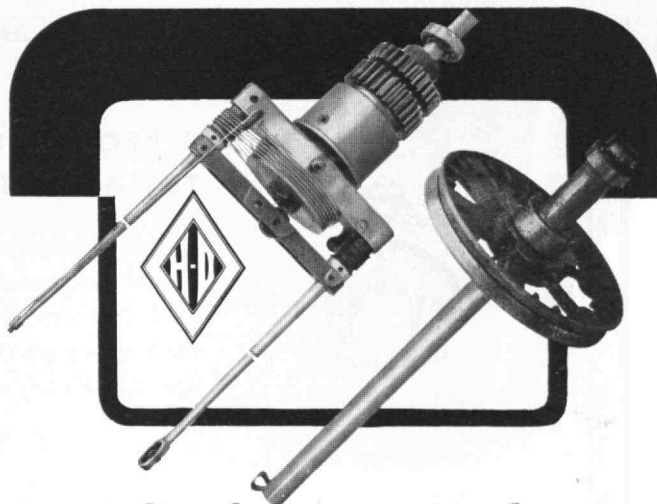
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NEXT WAR'S WEAPON

(Concluded from page 278)

The necessity for these measures should be kept under continual review, for the world would never feel completely at ease while they existed. A heavily armed police force, properly administered and limited in its functions, decreases, rather than increases, the citizen's sense of security. On the other hand, we must realize that the world today resembles the lawless Middle West of the last century, when an unarmed sheriff would have had little chance of enforcing order. When a world economic system is functioning smoothly, when all standards of living are approaching the same level, when no national armaments are left, then the launching sites could be permanently dismantled.

Conclusion

Only along these or similar lines of international collaboration can security be found. Any attempt by great powers to seek safety in their own strength will ultimately end in a disaster which may be measureless.

Upon us, the heirs to all the past and the trustees of a future which our folly can slay before its birth, lies a responsibility no other age has ever known. If we fail in our generation, those who come after us may be too few to rebuild the world when the dust of the cities has descended and the radiation of the rocks has died away.

ST. PATRICK'S DAY

(Continued from page 249)

In draft, Article VI called for "every member" to pay each January "the sum of 50 cents to defray contingent expenses," under penalty that after two years of delinquency he "forfeit his rights of membership." Tolman "objected to fees on principle," and he and Charles F. Stone, '71, "suggested subscriptions." William R. Nichols, '69 (after whom one of the present dormitories is named), successfully moved to strike out the penalty clause, and meanwhile someone else, unidentified in the minutes, managed to get assent to doubling the fee. Article VI came out: "Every member shall pay . . . the sum of one dollar, annually, to defray contingent expenses." By the standards of today the charge was indeed a most modest one.

Article VII as proposed, designated "June" as the month for "regular annual meetings," and left the calling of "special meetings" to the discretion of the Executive Committee. Allen, however, succeeded in shifting the regular meeting to "January of each year," and Tolman, in cautious Yankee fashion, had inserted a stipulation that the Executive Committee must call a "special meeting . . . at the request in writing of ten members." Article VIII caused little trouble for everyone seemingly appeared content that constitutional amendments subsequently introduced might be right and proper if passed "at any annual meeting by a two-thirds vote . . ."

(Continued on page 282)



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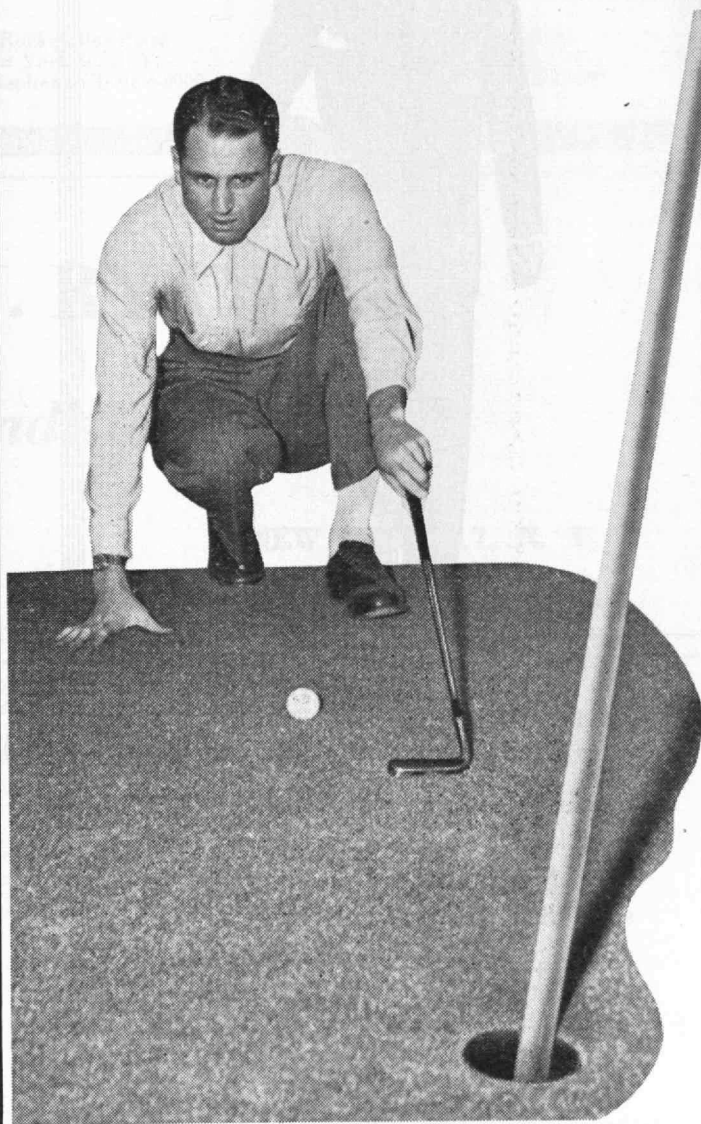


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ST. PATRICK'S DAY

(Continued from page 280)

The only "organizing" business remaining was the election of officers pro tem and that was done "by acclamation." Richards was chosen as president; Channing Whitaker, '69, as vice-president; Cross as secretary; and Isaiah S. P. Weeks, '71, and Kimball as members of the Executive Committee. At the Association's first "Annual Meeting," held in Rogers on the afternoon of the following January 27, (1876) the balloting confirmed Richards and Cross for two-year terms as first president and secretary, respectively; Weeks was moved up to the vice-presidency; and Allen and Francis H. Williams, '73, were elected to the first Executive Committee.

Activity of Youth

All the 36 graduates who played active parts in founding the Alumni Association, by attending one or both of the meetings of January 29 and March 17, 1875, were comparatively young men at the time. Only three — Joseph S. Emerson, '74, the eldest of the group, and Whitaker who were 31; and Richards who was 30 — had left their twenties behind, and half of those still in their twenties had not reached their 25th birthdays. Whitaker, incidentally, was the only one of the 36 who was a veteran of the Civil War. Enlisting in the 39th Massachusetts Volunteers, he was wounded and taken prisoner at Spotsylvania, and given up for dead by his family, with the result that Whitaker later had the extraordinary experience of reading his own obituary in the *Boston Globe* before he matriculated at M.I.T.!

All but three were native New Englanders: 28 of Massachusetts; Richards and Clark of Maine; Blodgett and Charles W. Hinman, '70, of Vermont; Willis H. Myrick, '74, of New Hampshire. Cross was a near-New Englander through having been born at Troy, N.Y., but Willis D. Harris, '73, and Emerson came into the world on foreign soil, respectively, at Truro in Nova Scotia and Honolulu, then capital of the island Kingdom of Hawaii.

Classwise, one-quarter of the 36 were from 1873; seven from 1874; six from 1870; six from 1871; four from 1868; and three from 1869. Allen was the sole representative of the Class of 1872. Coursewise, the 19 from Civil Engineering predominated. Mechanical Engineering had seven representatives, Mining Engi-

(Continued on page 284)

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ST. PATRICK'S DAY

(Continued from page 282)

neering had four, Chemistry, three, and Science and Literature, three.

Despite their youth, five of the 36 were already members of the Institute's staff, Richards since 1871 and Nichols since 1872 having held the rank of full professor. Cross and Whitaker were assistant professors, but the following June they, too, became professors; Wells at the time of the meetings was an instructor. Richards, Whitaker, and Cross also headed their respective Departments of Mining, Mechanical Engineering, and Physics. Though Nichols died untimely when but 39 years old, and Whitaker resigned from the Faculty in 1883, the active teaching careers of these five men averaged over 30 years. If one also takes into account the 29 years spanned by Allen, who was in private practice or with the Santa Fe railway from 1872 until he joined the Institute staff in 1887, the combined services of all six total 184 man-years of teaching at M.I.T.!

Succession of Officers

When Richards retired from the presidency of the Alumni Association in 1880, Tolman succeeded him in that office until 1883. Howard A. Carson, '69 (not recorded in the minutes as being present at either of the 1875 organization meetings), became the third president during 1884-1887; and Williams was the fourth,

1888-1890. Carson was the first alumnus elected to the Institute Corporation, in 1878; Tolman and Williams were the next so honored, in 1882. Cross continued as secretary of the Alumni Association until 1884; and Allen was its fourth secretary, in 1890-1892.

Myrick of New Hampshire lived seven months to the day after the March 17 meeting; Arthur W. Sweetser, '74, died in 1878; and six more (including Nichols and Kimball) did not reach the half-century mark. Another eight failed to attain age 65, including Blodgett and Wells; John R. Edmands, '69, also a founder of the Appalachian Mountain Club and librarian of the Harvard College Observatory from 1883 to 1910; Frank B. Morse, '73, prominent in mining circles in Mexico; and Weeks, for 23 years chief engineer of the Burlington's lines west of the Missouri River, during which time 3,000 miles were added to the system under his direction.

Statistics on Longevity

Of the 20 remaining from the original 36, five died in their later sixties, including Tolman; Nathan F. Merrill, '70, professor of chemistry at the University of Vermont; and Samuel E. Tinkham, '73, after 47 years as construction engineer in the Public Works Department of Boston. Seven more did not survive through their seventies, including Whitaker, Cross, and Forbes; Hinman, famed as a rifle marksman and for 20 years the first appointee as State Gas Inspector of Massachusetts; and Robert A. Shailer, '73, chief engi-

(Concluded on page 286)

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18	7	11.	15	.080"	7.5	8.50	.100"	13 10.50
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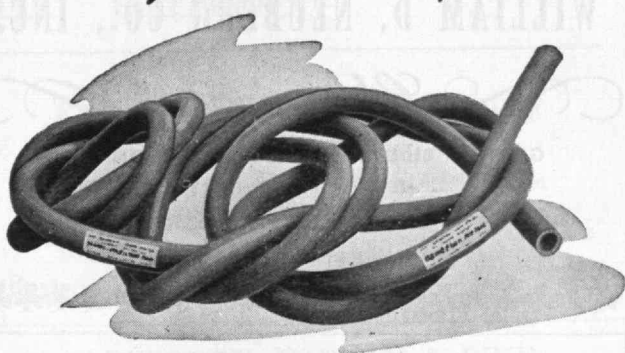
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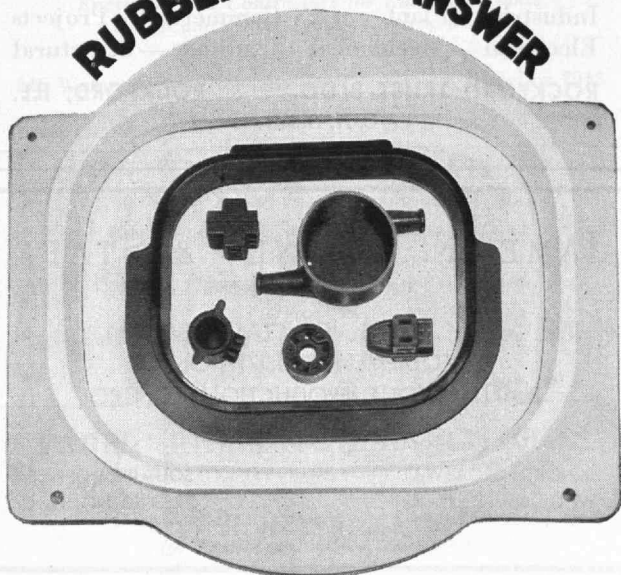
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ST. PATRICK'S DAY

(Concluded from page 284)

neer on the construction of the East Boston and of New York's Queensboro tunnels, and consulting engineer on the Cambridge subway.

Nearly one-quarter of the original 36, however, became octogenarians. Williams reached 84; and Elliot Holbrook, '74, reached 85. Emerson who, in 1903, retired to his native Hawaii, by then a Territory of the United States, and devoted the 27 remaining years of his life to research in conchology, became 87; and Edward H. Foote, '71, and Stone each lived to 88.

Willard, the first President of the Architectural League of New York in 1881, died in 1942, aged 93. Richards passed his century mark on August 26, 1944, and continued on three-quarters of the way toward 101. He died March 27, 1945, as one of the three persons ever elected honorary members of the Alumni Council. Allen became 96 on July 10, 1947, and lived until June 6, 1948. He was the last of the original 36 to go — and when he did go he went as an *active* member of the Alumni Council who had participated in the Council's discussions as recently as the 259th Meeting, held at the Graduate House on the evening of November 24, 1947.

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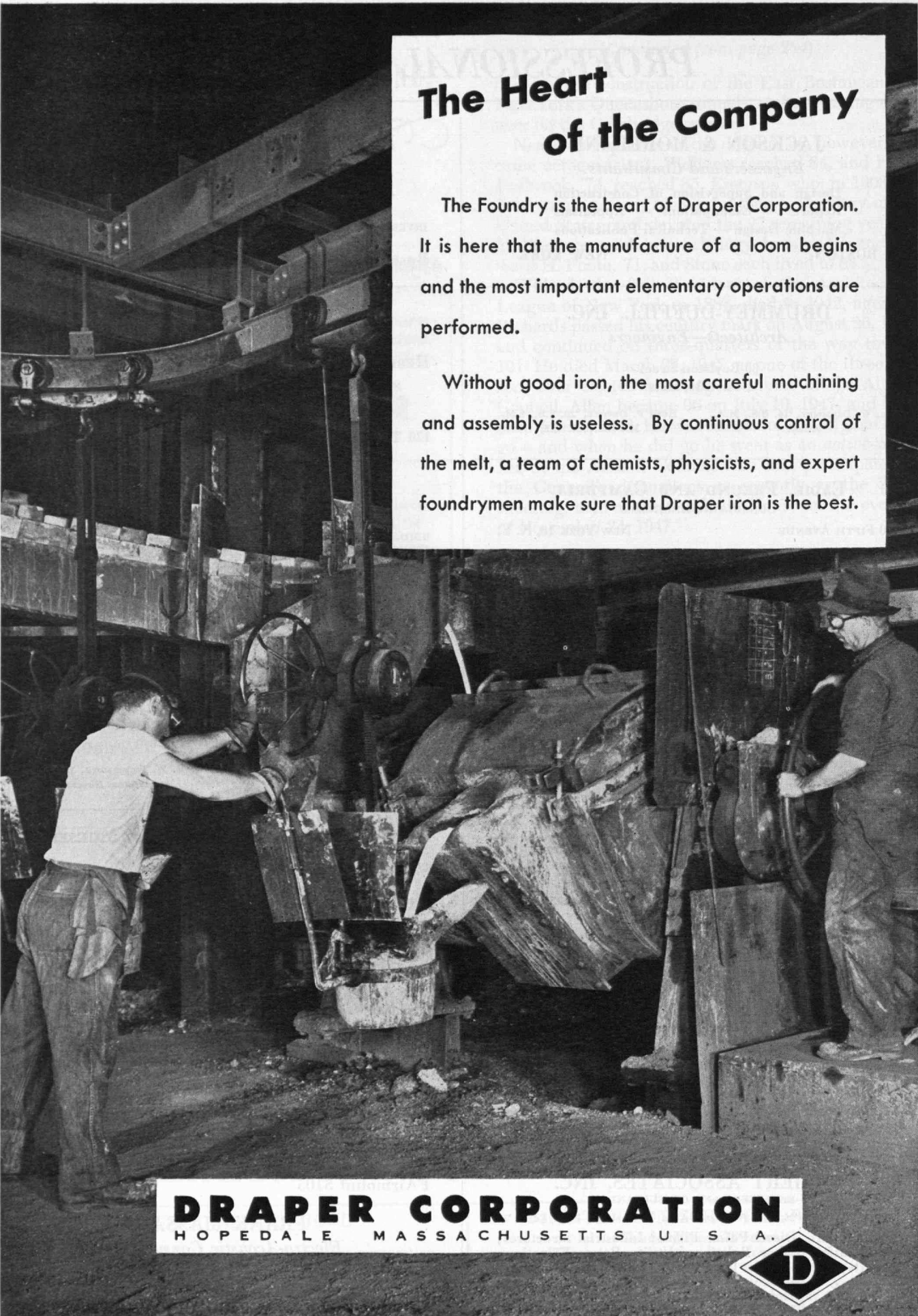
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Alumni AND Officers IN THE News

From the Platform

FLORENCE FOGLER BUCKLAND'20 presented a paper entitled, "Engineering as a Profession for Women," at the annual meeting of the American Society of Mechanical Engineers on November 28 in New York, N.Y. Mrs. Buckland also presented the paper, "Surface Heat-Transfer Coefficient for Hydrogen-Cooled Rotating Electric Machinery" at the winter general meeting of the American Institute of Electrical Engineers held in New York City January 30 through February 3. The latter paper was written in collaboration with S. H. Snell and R. H. Norris.

PER K. FROLICH'23 discussed "Some Aspects of the Fine Chemical Industry" at a meeting of the Connecticut Valley section of the American Chemical Society held on January 14 in Hartford, Conn.

RAYMOND L. BOWLES'24 addressed the Worcester chapter of the National Association of Cost Accountants on January 19. The address was entitled, "Economic Control of Inventories."

GEORGE A. WEST'26 was the speaker at a meeting of the Merrimac Valley chapter of the National Association of Cost Accountants in Methuen on January 19. Mr. West's talk was entitled, "Cost Control at the Foreman Level."

SAMUEL N. ALEXANDER'35 discussed machines that process information at a technical session of the American Institute of Electrical Engineers on January 12 in Pittsfield, Mass.

WILLIAM SHOCKLEY'36 delivered a talk on December 21 during the General Electric Science Forum, a radio program broadcast weekly from Schenectady, N.Y. Dr. Shockley's talk was entitled, "The Transistor."

MYLE J. HOLLEY, JR.'39 was the speaker at a meeting of the structural section of the Boston Society of Civil Engineers that was held on February 8. Professor Holley discussed the "Conical Shell Theory Applied to Concrete Tanks."

ROBERT W. MCKINLEY'40 was a speaker at the School Lighting Forum held in Washington, D.C., on February 2. The Forum was sponsored by the Capitol section of the Illuminating Engineering Society. Mr. McKinley's talk concerned "Planned Daylighting in School Buildings."

Our Congratulations

CHARLES-EDWARD A. WINSLOW'98 was presented with the 1949 award of the F. Paul Anderson Medal "for outstanding contributions in the field of heating, ventilating and air conditioning." The presentation took place on January 25 at the 56th annual meeting of the American Society of Heating and Ventilating Engineers in Dallas, Texas. Dr. Winslow is editor of the *American Journal of Public Health* and professor emeritus of Public Health at the Yale School of Medicine.

FREDERICK E. TERMAN'24 will be awarded the 1950 Medal of Honor by the Institute of Radio Engineers "for his many contributions to the radio and electronics industry as teacher, author, scientist, and administrator." The award will be made at the Institute's annual convention to be held March 6 through March 9 in New York, N.Y.

JOHN V. SHARP'36 was presented with the Sherman Fairchild Award for "outstanding achievement" in the field of aerial photography. The award was presented at the annual meeting of the American Society of Photogrammetry held in Washington, D.C., in January.

We Report with Interest

RALPH LOWELL, Term Member of the M.I.T. Corporation, is the recipient of the George Foster Peabody citation awarded to the Lowell Institute Broadcasting Council for outstanding contributions to education through broadcasting in 1949. The Council, formed three years ago, taps the educational resources of eight major colleges in Greater Boston in offering a series of educational programs each week for which radio and television are harnessed as vehicles of adult education. As sole trustee of the Lowell Institute, Mr. Lowell is responsible for the management of Boston's highly regarded Lowell Lectures and the Lowell Institute School, at which evening classes in technical subjects are conducted under the auspices of M.I.T.

In Black and White

JOHN B. RUSSELL'28, E. A. Mechler and M. G. Preston are the authors of "The Basis for the Optimum Aided-Tracking Time Constant" which appeared in the *Journal of the Franklin Institute*, Volume 248, Number 4, October, 1949.

HAROLD K. FARR'35 and Phillips N. Bosworth presented a paper at the American Institute of Electrical Engineers' fall meeting and have now seen the publication of this paper in the February, 1950, issue of *Electrical Engineering*. The title: "Cable Accessory Design Utilizing New Laboratory Techniques."

GEORGE T. RADO'39, M. H. Johnson and M. Maloof are the collaborators of the article, "A Single Pulse Voltmeter" which was published in the December, 1949, issue of *The Review of Scientific Instruments*. Volume 20, Number 12.

ROBERT C. FLETCHER'43 is another contributor to the December, 1949, issue of *The Review of Scientific Instruments*. The title that appears over his by-line is, "Production and Measurement of Ultra-High Speed Impulses."

CYRIL M. HARRIS, 6-45, and Vern O. Knudsen are the coauthors of the book, *Acoustical Designing in Architecture*. Published by John Wiley and Sons, Inc. February, 1950.

Obituary

JAMES W. JOHNSON'82, date unknown.
BENJAMIN M. HOWE'86, December 19.
HAROLD A. PITMAN'88, in 1948.
RUSSELL M. CLEMENT'89, in February, 1948.

EDWARDS J. GALE'89, March 6, 1949.
FRED A. CROSSMAN'90, September 21.
MEDOREM W. GREER'91, April 24.*
EDWARD C. CLARK'92, December 27.
FRANCIS WALKER'92, January 15.*
FRANK D. RICHARDSON'93, December 21.*
WILLIAM L. CLARK'94, in June, 1945.*
WILLIAM D. MCJENNETT'94, December 10.*
DANIEL W. RICHARDS'94, November 8, 1947.

HARRY C. WHITE'94, August 17.*
E. MORTON CHAPMAN'95, date unknown.
GORDON L. FOWLER'95, December 30.
FRED E. SHARP'95, September 23.
ALBERT E. SMYSER'96, December 15.*
CHARLES S. HURTER'98, January 2.*
FRANK N. PHILLIPS'98, December 9.
ROBERT B. WALLACE'98, date unknown.*
JOHN F. WESSEL'98, December 8.*
FRANK M. RILEY'99, May 22.*
WILBERT C. TANDY'99, September 12.
THOMAS NESMITH'00, November 9.*
WILLIAM C. PICKERSGILL'00, October 2.*
CHARLES W. CURTIS'01, May 31.
J. RUSSELL PUTNAM'01, January 17.
ALFRED W. KIMBALL'03, January 4.
ROBERT S. HAMILTON'04, December 26.
JOHN E. LAMB'05, date unknown.*
WILLIAM S. MANN'05, December 4, 1948.
T. M. POWERS POTTS'05, February 12, 1948.*

SEYMOUR M. RIVITZ'05, January 19.*
LOUIS E. ROBBE'05, January 10.*
THOMAS G. WEBBER'06, December 30.*
HARRY C. ARNOLD'07, September 24, 1947.

RAPHAEL G. HOSEA'07, November 20.*
ELMER J. KRAFFT'07, December 21, 1944.*

ERNEST F. LEWIS'07, January 18.
EDWARD T. ALMY, JR.'09, January 4.*
FELIX A. BURTON'09, November 28.*
GEORGE H. JONES'13, January 23.
BAYARD H. WATERBURY'14, December 15.*
BRUCE A. CLARKE'16, January 10.*
CHARLES O. DRAYTON'17, December 19.*
J. CARL FISHER'17, January 10.
HAROLD V. KALER'18, November 29.
RAYMOND B. COLLIER'20, in June, 1949.*
GUSTAV H. DIECHMANN'21, December 13.*
JOHN L. DUNLEVY'22, November 26.*
CLINTON W. HOWARD'22, September 22.*
LOUIS C. REYNOLDS'22, December 17, 1947.*

MORTIMER E. SERAT, JR.'24, December 19.*

ROBERT K. WELLS'24, April 15.*
EARL O. WILSON'28, September 30.
ARTHUR N. PISTOLAS'29, June 14, 1948.
ROBERT B. FAWCETT'30, October 11, 1948.*

WILLIAM HOVGGAARD, staff, January 5.

* Mentioned in class notes

News FROM THE Clubs AND Classes

CLUB NOTES

M.I.T. Association of Cleveland

We surely are happy to report the engagement announcement of Patricia Anne Green to William Henry Robinson'24. Pat is an alumna of Allegheny College where she was a member of Theta Upsilon Sorority. She is the daughter of Howard Whipple Green'16. Bill, advertising manager of the General Electric lamp department, is a past executive vice-president of our Association, and this news will be received with joy by all of those who have had the good fortune to know Bill Robinson.

Those of you who miss our alumni meetings make a great mistake since the atmosphere of our dinners is extremely pleasant and instructive as was amply displayed at our Christmas week luncheon for current students. Four of the students gave their impressions of various phases of life and activity at the Institute today. Louis Lehmann'50 spoke of a popular activity, Tech's-a-Poppin', a new program to most of us, that is patterned in some ways after the annual Dartmouth Carnival. It is an open house arrangement which includes a week end of dances, sporting events, and fraternity house parties. We were also informed that Technology's Inter-Fraternity Conference received a national award as the outstanding I.F.C. of the country in 1947-1948, a bit late as news but encouraging at any date. Bill Chandler'52 spoke on the subject of sports, mentioning that this last was a good athletic year of which one could be proud. Bill stated that the S.A.E. house won the football championship, and that Sigma Nu was once again the basketball champ. Oscar Hedlund, as lead track coach, is continuing his good job and is able now to make use of the large indoor track in the Rockwell field house. Chuck Houska'51 gave us news concerning "The Plant," speaking of the wonderful S-shaped senior house, the attractive Hayden Library, the new towing tank, and the progress being made on the Eastgate apartment building. John Morgenthaler'51 explained the Development Program from the point of view of the student, being insistent that a new auditorium and a new dormitory are most sorely needed. It was very evident that the student body is well informed on the purpose and progress of the drive. The students are anxious to do all in their power to promote the drive's success.

Our custom of having each person stand and recite his name, giving class, course, and business association, has been helpful to all, in addition to providing the Secretary with references for this column. We found that Doc Smith'23 had as guests,

Paul J. Gross, Mr. Gross' son, Paul, Jr., and Frank Young of the University School. Paul, Jr., and Frank are prospective M.I.T. men. It may be that we should include prospective entrants in this annual luncheon or set a separate meeting for that purpose; a good subject for our next executive meeting.

The students in attendance were: William P. Chandler'52, William K. Geist'50, William A. Gent'53, Richard E. Hare'51, Roger D. Harsch'51, Alfred F. Hofstatter'52, Charles R. Houska'51, Louis E. Lehmann'50, William F. Moon'51, John H. Morgenthaler'51, John R. O'Donnell'53, John C. Richardson'51, Rainer K. Sachs'53, Owen P. Thomas'51, Ronald I. Wolfson'53, Albert L. Zesiger'51. Alumni present were: A. A. Gould'10, A. I. Bradley'21, W. G. Loesch'21, F. H. Wood'22, C. H. Hubbard'23, R. H. Smith'23, S. F. Stewart'24, H. P. Ferguson'27, T. R. Wigglesworth'30, J. P. AuWerter'38, F. W. Reuter, Jr.'38, G. R. Young'37, H. A. Zimmerman'37, E. O. J. Hellano'40, L. C. Turnock, Jr.'41, R. J. de Fassel'46, R. G. Rauch'46, F. G. Folberth'48, P. L. Nies'48, R. W. King'49, W. C. Mitchell'49. — G. RICHARD YOUNG'37, *Secretary*, The Weatherhead Company, 300 East 131st Street, Cleveland 8, Ohio.

M.I.T. Club of Fort Worth

One of the latest members of the ever growing family of M.I.T. Clubs is our Club in Fort Worth. Last year when H. E. Lobdell'17 was in Dallas for a meeting, the Alumni in Fort Worth were invited to their "neighboring" city. Several thought that, instead of driving all the way to Dallas for meetings, maybe we should have our own Club. At the time of the convocation, a number of Alumni, wives, and guests gathered for dinner and to listen to Mr. Churchill speak from Boston. At this time, there was more talk of forming the Club. A poll was taken of the Alumni in the Fort Worth area, and it was readily apparent that such an organization would be welcomed. The Club was formed, with 20 members present for the first meeting, and the first official act was a formal dinner for President Killian on October 14, in conjunction with the M.I.T. Development Program.

The officers of the Club are: Miles Covendale, 2-44, President; Joseph Morgan'37, Vice-president; Chester Robert Gates'48, Secretary-Treasurer; with Thomas S. Byrne'13, and Willington H. T. Loh, 2-44, as members of the Executive Committee. Furthermore, two "spark plugs" of the Club are Count B. Capps'20, and Simon W. Freese'21.

Mr. Lobdell visited Fort Worth recently, and an informal dinner meeting was held. Most of the members were present, in spite of the fact that it was the coldest and iciest night this winter — so far. No matter how cold it might have been outside, though, everyone was quite

warm inside; eating his fill of genuine Mexican food. Mr. Lobdell welcomed our new Club into the group of M.I.T. Clubs, and spoke briefly on present conditions at Technology. An informal question and discussion period followed. Needless to say, we are looking forward to Lobby's next visit. — CHESTER ROBERT GATES'48, *Secretary*, Route 1, Aledo, Texas.

M.I.T. Club of Monterrey

The New Year started with our meeting on January 9, and we had as guest of honor, H. E. Lobdell'17, Executive Vice-president of the Alumni Association. This gathering took place at the Instituto Tecnológico de Monterrey with full attendance. Mr. Lobdell presented to the Tecnológico the book, *Modern Arms and Free Men* by Vannevar Bush'16, President of the Carnegie Institution of Washington, D.C., which was autographed by Dr. Bush. Following this, he presented to Ramón F. Muñoz'09, a book, *Maxims and Reflections*, by the Right Honorable Winston Churchill, that Mr. Churchill has personally autographed for Mr. Muñoz. It was sent to him through Lewis Douglas'17, American Ambassador in London. Both gifts of unestimable value are very much appreciated.

The Club was informed of the scholarship that M.I.T. has granted to the M.I.T. Club of Mexico City; and at the initiative of the latter, we shall join forces in having this scholarship named "for the Alumni of M.I.T. in Mexico." The necessary funds will be raised in Monterrey and Mexico City to take advantage of this gift of M.I.T. to send one or two worthy students to Technology for a year or two of post-graduate study. — The Club was happy to have as new members Eduardo Belden'17 and Salvador Madero'00.

Those present were: Roberto Garza Sada'18, Victor Bravo Ahuja, Leonardo Siller'28, Hernán Rocha'48, Roger Valentine'23, Eduardo Belden'17, Rodolfo González Garza'34, Enrique J. Muñoz'10, Bernardo Elosúa'23, Camilo Sada'32, Julio de la Fuente'33, Alberto P. González'01, Juan Celada, 2-44, Ramón F. Muñoz'09, Salvador Madero'00, Eliot Camarena'01, Mr. Slavens, American Consul in Monterrey, F. M. Corliss'25, and Bruce Duffett'40. — BERNARDO ELOSÚA'23, *Secretary*, Box 360, Monterrey, N.L., Mexico.

M.I.T. Club of Schenectady

H. E. Lobdell'17 was the speaker at our dinner meeting held on January 18 at the Edison Club. Ed Lawrence'47 was in charge of the meeting and he introduced Lobby to our group. Wives and friends were invited, and many an acquaintance was renewed in the gathering before and during dinner. Lobby's visit with us marked his 100th appearance with M.I.T. clubs since 1947, and his talk and discus-

sion suited the occasion. He mentioned many of the interesting experiences he has had in visiting clubs throughout the country, particularly some of the details of his visit to Monterrey, Mexico. Later, he explained the most recent changes in the Institute and grounds and showed how the changes fit into the long-range plans of the Institute. The meeting was opened for the usual question and answer period.

Those present were: P. L. Alger¹⁵, H. W. Bibber²⁰, C. J. Koch, Jr.²³, A. P. Kellogg²⁴, M. S. MacNaught²⁴, K. R. VanTassel²⁵, G. C. Houston²⁷, C. F. Barrett, Jr.³⁴, L. G. Peterson³⁶, G. M. Ketchum⁴¹, J. H. MacLeod, Jr.⁴¹, R. W. Stanhouse⁴¹, E. B. Judd⁴², J. W. Czarkowski⁴³, David Jealous⁴⁴, W. B. Rodeman⁴⁴, J. G. Holmes⁴⁷, E. S. Lawrence⁴⁷, C. H. Oliver, Jr.⁴⁷, J. F. Robertson, Jr.⁴⁷.

Mrs. F. F. Buckland²⁰ presented an interesting paper at the annual meeting of the American Society of Mechanical Engineers in New York City. "Engineering as a Profession for Women" was her title. The paper was well received and resulted in many articles in newspapers throughout the country. In addition to fulfilling her duties in being a mother and making a home for her family, Mrs. Buckland is a specialist in heat transfer in the General Electric's general engineering and consulting laboratory. She is now preparing a paper on "Surface Heat-Transfer Coefficient for Hydrogen-Cooled Rotating Electric Machinery" to be given at the winter general meeting of the American Society of Electrical Engineers. Her paper is a joint paper with two other engineers. Mrs. Buckland will present the paper. — Ivor Collins⁴¹ has left Schenectady for a new assignment at the West Lynn Works of the General Electric Company. Our best luck to him in his new work. — WILL B. RODEMAN⁴⁴, *Secretary*, General Electric Company, Building 81, Schenectady 5, N.Y.

M.I.T. Club of Southern California

Treasurer George Cunningham²⁷ of 3499 San Pasqual Street, Pasadena, reports that dues for 1950 have already started to come in with Walton¹³, MacDonald³², Brown⁴³, Beebe¹⁰, Hamilton³⁶, Esner²¹, and Cleveland⁹⁸ leading the procession. The treasury is in good condition because of alumni gifts for improvement of the Club in addition to dues, and of the general attitude of all the officers in keeping the expenses down by voluntary contribution of their time in various services. The goal is to build the cash balance to a level that will permit the financing of self-liquidating projects without the officers "going out on a limb" personally as guarantors to start the projects.

The 1950 directory should be under way by the time this is read, as Sammis²⁸, Scott⁴⁸, Grantham²⁵, Hakala³⁵, Mayer⁴¹, Herrick²⁴, Gupta¹¹, Rethorst³⁶, Spear¹⁷, Stadig⁴¹, Strauss³⁸, Dubbs³⁵, Flynn²³, Sutton⁴³, Spiegel³², McDowell⁴⁵, Morton¹³, Burns³², Welles¹⁵, and many others have volunteered their time. The first contribution is \$5 from Scott⁴⁸; and Mellema¹⁵, Spear²⁶ and

Golsan, Sr.¹², have volunteered to take ads. Volunteers for committee officers are wanted.

The 1946 directory contract with the printer was guaranteed by the committee — Kahn¹⁵, Beebe¹⁰, Golsan¹², Cunningham²⁷, Sammis²⁸, Hattis³⁴, Alder³⁷, and Weir³⁸; but it is hoped, as per the financial policy above, that the club treasury will do the guaranteeing. At the last report, over 60 per cent of those paying the annual dues of \$2 had added a gift; in most cases making their checks for an even \$5.

Since the 1946 directory, there has been an influx of Alumni with a net gain of approximately 150, making the total number of Alumni in our area a little over 1,200. M.I.T. has the largest group of technical college graduates in this area and far exceeds the number of graduates of our neighbor and friend, Cal. Tech. The trend of the past year has shown graduates of the classes of the past 10 years gaining in per cent of new members. The new directory will have the same typographical excellence established by the late Kenneth Kahn and will be distributed to all leading industrial firms.

The banquet on January 12 honoring President and Mrs. Killian was a noteworthy event with an attendance of 460; the largest Development Program meeting up to that date, in the country. A very large number of the Alumni had the pleasure of personally meeting the Killians in the foyer of the Biltmore ballroom before the dinner. Chairman W. L. Stewart, Jr.²³, gave the credit for the large turnout to the publicity put out by Mr. Manley and Miss Reynolds in the Development Office and to the officers of the local Club — President Bates²⁴ and Secretary Beebe¹⁰. The arrangements were in charge of Emerson Spear²² assisted by Club Treasurer George Cunningham²⁷ and the entire affair progressed smoothly to the pleasure of all present.

President Killian's address dealt largely with the present high standing of M.I.T., the plans for the future and the necessity of additional funds to take care of the present equipment and to keep up with the increasing higher qualifications of the graduates, at each succeeding commencement. His remark, "I believe in individuals making their own decisions," brought loud applause. The most excellent colored movie of scenes at M.I.T. ended this — perhaps historic — meeting. The Club has been benefited greatly by the work of the Development Office. — HIRAM E. BEEBE¹⁰, *Secretary*, 1847 North Wilcox Avenue, Hollywood 28, Calif.

Washington Society of the M.I.T.

The announcement for Stag Night on January 12, 1950, read: "We're setting up a 'gambling Hell' with all the trimmings — Roulette, Wheels of Fortune, Galloping Dominoes, Fantan. Here's your chance to show that Bernoulli's Theorem, Fourier's Series and Combinatorial Topology can beat the game." The men flocked in for an evening of entertainment which has become a popular annual event.

After dinner, Ernest E. Blanche, expert

on games of chance and close student of gambling for 30 years, showed how you can't win. As pointed out in Mr. Blanche's books and numerous articles, you always lose in what the speaker termed "America's biggest business." Props for the talk included loaded dice, marked cards, magnetic chuck-a-luck equipment, and a painless slot machine that operates with washers. After demonstrating how to lose, Mr. Blanche set up the "Hell" referred to in the notice. The members recklessly risked their all and usually lost. Their "all" was stage money, bought at the gate, and spendable only for bargains auctioned after games of chance were closed for the evening. The event provided a gay time and marked the fourth consecutive annual "gambling" night the Club has had.

Present were: G. L. Arnold³⁰, H. M. Baxter¹⁷, A. D. Beidelman¹⁵, A. E. Beitzell²⁸, A. F. Bird³⁰, C. F. Blanchard²², M. J. Block⁴¹, C. W. Bohrer³³, E. E. Christopher³⁶, S. J. Cole²⁶, J. G. Crane⁹⁰, R. G. Crooks⁴⁸, G. B. Devey⁴⁶, P. L. Dougherty⁹⁷, L. K. Downing²³, T. T. Fell⁴⁹, E. W. Glen²⁹, Lester Glickman³², L. J. Grayson¹⁹, O. B. Hartman⁴³, A. S. Heyser²⁶, A. M. Holcombe⁰⁴, J. E. Howarth, Jr.²⁹, E. F. Kriegsman⁰⁵, T. C. Lu⁴⁴, D. A. Lundquist¹⁹, Richard McKay²¹, W. K. MacMahon²², F. C. Meltzer²⁸, G. D. Mock²⁸, H. C. Morris⁰⁰, W. G. Peck⁴⁰, A. J. Perry²⁹, E. O. Persen³¹, J. A. Plugge²⁹, F. S. Pohanka, Jr.⁴⁴, H. A. Reuter⁴⁹, C. C. Smith²⁸, M. P. Smith¹⁹, J. H. Sprague, Jr.⁴³, N. P. Stathis²⁹, G. W. Stone⁸⁹, M. E. Taylor⁴², W. E. Thomson³⁸, R. K. Thulman²², William Wallace, Jr.⁴⁸, H. F. Ware²⁵, T. C. Warner, Jr.⁴⁷, M. E. Weaver⁰⁵, H. E. Wehmiller²⁵, and C. L. Zakhartchenko²⁵. — JOHN ADE PLUGGE²⁹, *Secretary*, 35 Oxford Street, Chevy Chase 15, Md. ALBERT F. BIRD³⁰, *Review Secretary*, 5070 Temple Hills Road, S.E., Washington 20, D.C.

The M.I.T. Club of Western Pennsylvania

The Club held its regular monthly meeting on December 14 at the University Club in Pittsburgh. The meeting was opened by the President, George Hoffman²⁸. The minutes of the previous meeting and the treasurer's report were read and approved. George Morrisette³⁵ then introduced the speaker for the evening, H. R. Hughes, assistant chief engineer for the Jones and Laughlin Steel Corporation. Mr. Hughes gave us a very good talk that was of particular interest to engineers in this area. The subject was "Iron Ore — Its Mining and Processing." Not only did Mr. Hughes discuss the technical processes for mining and beneficiating the iron ore, but he also gave us an economic and historical background for iron ore mining and processing. He spoke of the various types of ore that have been mined, and the increasing necessity today for utilizing the lower grade ores and why this will develop in the future. While the talk dealt largely with the Mesabi mines, reference was made to the Appalachian and Michipicoten areas as well as Northern Michigan and Labrador. A colored movie of

open-pit mining on the Mesabi Range was shown. After the movie, there was a very lively discussion, not only on iron mining but also on coal mining, and the relationship between the two. Mr. Hughes handled the discussion period, and only the lateness of the hour broke up the meeting.

A very enjoyable and informative evening was had by the following who attended: H. M. Baker'30, C. T. Barker'27, C. G. Beatty'42, D. B. Demond'18, V. J. Dobert'36, F. L. Gemmer'24, William Goodridge'26, M. M. Greer'26, H. H. Hall'14, R. D. Hoak'28, H. C. Hoar'25, G. M. Hoffman'28, B. M. Hutchins'32, L. K. Johnson'43, R. L. Kerrigan'45, W. C. King'48, A. L. Klieves'01, R. G. Lafean'19, C. H. Mohr'33, G. A. Morrison'09, G. C. Morrisette'35, Aaron Redcay'34, E. A. Soars'21, M. S. Tarnopol'36, J. A. Tryon'24, R. C. Wellwood'33. — GEORGE C. MORRISSETTE'35, *Secretary*, 469 Mapleton Avenue, Mt. Lebanon, Pittsburgh 28, Pa.

Worcester County Alumni Association of M.I.T.

The first dinner meeting of the 1949–1950 season was held on December 6 at the Sheraton Hotel in Worcester with 40 members and guests present. After outlining the club's program for the coming season, Max Levine'25, our new president, introduced the speaker of the evening, Edward R. Schwarz'21, Professor of Textile Technology at the Institute. Professor Schwarz's talk on "Textiles, A Heritage and a Promise" proved to be amusing as well as interesting and enlightening. The large number of questions put to Professor Schwarz after his talk was evidence of the interest he aroused. He outlined the history of textiles from the days of the cave men to the present day, and also brought us up to date on some of the latest developments in plastic textiles. Samples of textiles several thousand years old, and also of the new plastic textiles were on display.

President Levine pointed out to the members that the name of our Association was inconveniently long, and suggested that the name be changed to coincide with the names of other local clubs. After a short discussion, it was voted without dissent to change the name to, "M.I.T. Club of Central Massachusetts." It was suggested that Worcester County be dropped from the name because we have for many years had members from towns in adjacent counties where there are no nearby local clubs. This change will become effective when and if approved by the Alumni Council.

Three more meetings were scheduled for the year. The winter meeting was held at the plant of the Norton Company in Worcester on January 30. The spring meeting will be held on March 20 at which time Professor Douglas V. Brown and J. M. Scanlon will talk on "Labor-Management Problems." Our annual meeting and Ladies' Night will be held on May 22. — DONALD M. WHITEHEAD'45, *Secretary*, 464 Salisbury Street, Worcester, Mass. WARREN H. HOWARD'44, *Assistant Secretary*, in care of General Electric Company, 507 Main Street, Worcester, Mass.

CLASS NOTES

• 1890 •

Late in November, a call on R. G. W. Butters at Haverhill, Mass., who has not been coming to our recent reunions, found him in fairly good health, now retired from his connection with the Telephone Company, and expecting to join us at our 60th reunion. Will Curtis dropped into the office of the Secretary just before Christmas to discuss our reunion. He looks as hale and hearty as at our 50th; and while continuing to practice medicine, he finds Cape Cod a delightful relief after his many years in the city. Sidney Horton telephoned suggesting, now that we cannot have Harry Goodwin's usual résumé of advances and conditions at M.I.T., that we arrange for someone to do this. Probably we should first try our two members of the Corporation. Bertram Lenfest came over from Brooklyn to spend the holidays at the New England Baptist Hospital where he was operated on for hernia of the esophagus. As seen by the Secretary after the preliminary he was cheerful and comfortable and his daughter writes he has returned home, happy to be able to eat and drink again. His weight had gone down to 107 pounds. The Secretary and Mrs. Packard started at Christmastime for Longwood, Fla., where they expect to remain two or three months. En route, a call at the office of Pierre du Pont found him preparing for a big family reunion at his estate, celebrating on January 1 the 150th anniversary of the landing in America of the ancestor whose name he bears. Pierre says he plans to be with us on our 60th, June 11 and 12, as do all contacted to date (January 20), 11 in number. We hope to make it 25. — GEORGE A. PACKARD, *Secretary*, 53 State Street, Boston, Mass. CHARLES W. SHERMAN, *Assistant Secretary*, 16 Myrtle Street, Belmont, Mass.

• 1891 •

Your Secretary has recently received interesting letters from Walter Hopton, Bert Kimball and Robert Ball. Hopton admits he is 85 years old and is still conducting the business of the Hopton Company in Syracuse, N.Y., purchasing engineers and manufacturers agents; but he is thinking of giving up soon before he gets too old to retire. Bert Kimball sends cheer to the Class "from sea to shining sea," and as a seasoned Californian, he seems to feel it necessary to add "that the Pacific really does shine." Another interesting letter from Robert Ball in England encloses a long clipping from the London *Times*, which reports a discussion of the merits of schools of technology independent of the classical universities with departments of pure science. In it they give a nice pat on the back for M.I.T. "It was suggested that the universities might more easily preserve their character and traditional balance if the development of the technological study and research took place, at least partly, in new institutions after the model of the Massachusetts Institute of Technology."

Harry Young received a letter from Mrs. Greer dated January 5, telling of the death of her husband, our old classmate, on the 24th of last April. No further information is available at this time. — Your Secretary takes this opportunity to solicit notes and comments to show what our old friends and members are interested in, what they have been or are doing, and how the world has used them. — FRANK W. HOWARD, *Secretary*, Bemis Associates, Inc., Post Office Box 147, Watertown 72, Mass.

• 1892 •

The Secretary has just received the sad news of the death of Francis Walker on January 15, in Washington, D.C. The following, substantially as given in an article in the New York *Times* gives a good summary of his career: "Francis Walker, former chief economist of the Federal Trade Commission, died here . . . at the age of 79. Although he was born in Washington, Dr. Walker was a descendant of Massachusetts families. His parents were the late Gen. Francis Amasa Walker, President of the Institute at the time of his graduation from M.I.T., and Exene Stoughton Walker. He was graduated in 1892 as a Bachelor of Science in Course IX, and later obtained A.M. and Ph.D. degrees from Columbia University. In 1894 and 1895 Dr. Walker was a special agent of the Massachusetts Board to Investigate the Unemployed. Later he served consecutively as instructor in economics at Colorado College, professor of economics at Western Reserve University, and as a researcher on the coal, oil, and steel industries in Europe. He served as chief economist of the FTC from 1915 until his retirement in 1941. In this post he was in charge of Government cost-finding work during the first World War and corporate and financial phases of electric and gas-utility industries from 1928 to 1935. Dr. Walker was the author of several books, articles and papers on economic subjects, particularly trusts. He was a member of the Cosmos and Chevy Chase clubs here. In 1908 Dr. Walker married Helen O'Sullivan. Mrs. Walker died in 1938. Three children survive: Francis S. Walker of New York, M.I.T. 1930, Mrs. Russell Snodgrass of Baltimore and Evelyn W. Walker of Washington."

The following quotation from a statement to our class secretary at the time of our 50th reunion provides a more personal touch concerning the activities and aims of his career. "From strategic positions in the Federal Government, I helped to develop, by scientific methods of inquiry, a better knowledge of (1) private business enterprise, respecting organization, finance, accounting, production, transportation and trading policies, competitive methods and other relations with producers and consumers, and so on (2) methods of improving said conditions, thereby (3) tending to protect business enterprises from their real enemies, without and within being (4) guided by the idea that properly conducted private business enterprise is an indispensable factor in the development of individual liberty

and national welfare." — CHARLES E. FULLER, *Secretary*, Box 144, Wellesley 81, Mass.

• 1893 •

Frank Douglas Richardson, who graduated with our Class from the Course in Mechanical Engineering, died in Cleveland, Ohio, on December 20 at the age of 78 years. Following graduation, he was employed for two years as assistant to Professor Schwamb. In 1896, he became associated with the American Telephone and Telegraph Company serving in various capacities until he was appointed engineer for the divisions of toll equipment and inside plant in 1919. He was well known in the communications industry and was recognized as a specialist in his particular field of long lines toll plant. His service with the telephone company covered some of the years of the company's greatest expansion. He was a member of the American Institute of Electrical Engineers and of the Telephone Pioneers of America. He is survived by his widow, the former Ida M. Parshall, whom he married on June 14, 1911. — FREDERIC H. KEYES, *Secretary*, Room 5-213, M.I.T., Cambridge 39, Mass. GEORGE B. GLIDDEN, *Assistant Secretary*, 38 Chauncey Street, Boston 11, Mass.

• 1894 •

On the eve of a departure for the annual meeting of the Refrigeration Research Foundation in Chicago, where, as chairman of the board of governors, the Secretary has some minor duties, these few items are sent in just to prove that the Secretary is still trying to do his job. From Chicago, he will take a month of combined business and pleasure on the West Coast. Most important business is to see old friends and classmates, especially Austin Sperry, Jack Nowell, Arthur Fowle'93, and any others of our era that may be located. Other business is to go to headquarters of the Foundation above mentioned to confer with the director of research in Berkeley, and to attend to some matters pertaining to the family company, The Benjamin Chase Company of Derry, N.H. This company, founded in 1867, was incorporated in 1906 by John C. Chase'74. Your Secretary was lucky enough to marry his daughter four years later. He has now been president of the company since 1936 and his son, Samuel Chase Prescott'33 is now treasurer and general manager. As we have numerous customers on the West Coast, it is of interest to make friendly calls on them.

The Secretary has nearly completed his history of the Boston period of M.I.T., on which he has been working for two years. More of this in later notes. It will probably be published this year by the Technology Press. The Secretary has long felt that such a history should be made available and took on himself the job of preparing one. It will end with the removal of M.I.T. to Cambridge in 1916.

Notes from classmates get scarce as the years pass. Milton M. Wheeler, who left before graduation to practice Civil Engineering in Central City, Ky., has now

evidently retired for he sends in as his present address: Post Office Box 206, Sarasota, Fla. A pleasant note from John Ferguson indicates that he is well and happy in his retirement in St. Petersburg, Fla. (646 34th Avenue, South). Perhaps he and Wheeler can make contact. The grapevine gives the good news that an operation for cataract has resulted in great improvement in vision for Harold Chase, since he was in Boston for our reunion. — With much regret, three deaths have to be reported, although one is not of recent occurrence. William L. Clark, long lost to the Secretary, died in June, 1945. Harry C. White, who was with us in our freshman year, died at his home in Groton, Mass., on August 17, 1949. William D. McJennett, long a sufferer from chronic arthritis, passed away at the Schervier Hospital in New York City, on December 10, 1949. He had lived at this hospital for much of the time since he met with us in our 50th reunion in 1944. It is certain that all who met him there will recall his courage, and will feel deep regret at his passing. — SAMUEL C. PRESCOTT, *Secretary*, Room 5-213, M.I.T., Cambridge 39, Mass.

• 1895 •

An interesting letter has been received from Harold K. Barrows. Last August Professor Barrows moved his office from 6 Beacon Street, Boston, to his home at 332 Highland Avenue, Winchester, Mass. He feels that he at least has passed one milestone in his professional career since he was located at Beacon Street for more than 45 years, and such connection carries memories of the many hydraulic problems which have been his life work. He has constructed a most suitable office in the billiard room in his garage, where he has arranged his many books and files, and now does whatever business he may accept at will. While at home, he will be active in completing a trilogy of his books, which now include *Water Power Engineering*, third edition, 1943, and *Floods, Their Hydrology and Control*, 1948. We hope that he may still be privileged to do just the things he wants to do, and to enjoy the mental fruits of his professional career during his leisure hours.

Eddie Alden has at last retired from his business connections and taken abode at 715 Ocean Avenue, New London, Conn. Whether intentional or not, he has located as near the water as possible, so he and Mrs. Alden can take their morning plunge if the "water is possible." In winter he is located just 14 miles from their summer cottage at Rogers Lake in Old Lyme. His daily record at swimming indicates that his last plunge during the year 1949 was on November 12. We trust that both of them will enjoy many more years of outdoor compatible activities. Friends of Mrs. Henry C. Grant, Course VII, will be interested to know that she has a new address: Room 334, 520 Boylston Street, Boston 16, Mass. Some plans covering our 55th reunion next June are in the making and should be ready, shortly, for your discussion. — LUTHER K. YODER, *Secretary*, 69 Pleasant Street, Ayer, Mass.

• 1896 •

The Reverend Welles M. Partridge is again at the Storrow House where he is being given considerate medical care for his chronic ailments. His professional activities have been reduced to the vanishing point because of his failing health, and some of the Class have been kind enough to raise a small fund for his immediate needs. Your Secretaries are attempting this service not only for Welles but for any of our Class who are in real distress. At best, the amount must be limited to modest assistance. It might be well at this time to formulate some policy to meet the future needs of worthy classmates. For those who have not paid their class dues of \$2, this might create a stimulating impulse to be credited with having paid toward the class finances.

We again received word of James L. Howe. This time through the Newburyport, Mass., *News* which informs us of the congratulations offered by the journal of the Washington and Lee University to Dr. Howe, Professor Emeritus of Chemistry, on his 90th birthday. The clipping adds: "Dr. Howe was born Aug. 4, 1859, in this city, and was graduated with an A.B. from Amherst college. He also holds degrees from Gottingen, the University of Berlin and . . . Technology, and is a member of many scientific societies both in this country and abroad. Besides his bibliographies on platinum metals, Dr. Howe's writings include several textbooks and contributions to scientific journals."

Another newspaper clipping brings us the sad news of the death of Albert E. Smyser on December 15: ". . . A native of Pittsburgh, he was graduated from . . . Technology in 1896. He was associated for several years with the U.S. Steel Corp., at Duquesne, Pa., and later the La Belle Iron Works, Steubenville, Ohio. He was purchasing agent during World War I for the Koppers Co., of Pittsburgh. He was affiliated with the Aluminum Co. of America during World War II. He retired five years ago coming . . . [to Harwichport] to establish his permanent home. He was a member of the Shadyside Presbyterian church, Pittsburgh for 48 years. He leaves his wife, Mrs. Leila Palmer Smyser, two sons, Eugene P. Smyser of Waynesboro, Pa., and Albert E. Smyser, Jr., Oak Ridge, Tenn., and a daughter, Mrs. Donald D. Talbott, Stamford, Conn."

The Secretary was very pleased to hear from Guy L. Morrill of 48 Howell Street, Canandaigua, N.Y., and wishes to quote from his letter for the interest of classmates: "Although my work and activities through the years have tended to cut me off from my Technology connections, the severance has never been complete nor has my sense of deep indebtedness to M.I.T. lessened. When *The Review* comes, the first thing I turn to is the '96 class notes. It always gives a bit of heart stirring to read something of the doings of those I knew years long since gone. When Charlie was alive, he was good enough to nurse this interest by inviting me to have a share in the class financial objectives and in the paying of my class

dues. This gave me a chance to furnish such evidence as a minister's salary allowed that the Technology deposit in me is not an entirely run out vein. I am not certain that Charlie's going has not made me a delinquent in my class dues. Enclosed is a check which I hope puts me in the black. It was pleasant to read in the January Review of the recognition given to you for the significant service of many years to the health and physical fitness of Technology men. Your acclaim is acclaim for '96, too."

William E. Barbour is now at Druid Hills, Hendersonville, N.C. Don't forget to keep us informed of any personal activities or information regarding any of our classmates. — JOHN A. ROCKWELL, Secretary, 24 Garden Street, Cambridge 38, Mass. FREDERICK W. DAMON, Assistant Secretary, 275 Broadway, Arlington 74, Mass.

• 1897 •

Your Secretary is delighted to be able to include in his class notes a copy of a letter received in January from our classmate, Ethan H. Howard, VI, who lives in Youngstown, N.Y. The letter follows: "Just a line to tell you what to me is a very important piece of news for the next issue of The Review. I am a great-grandfather; have been since the 13th of December. My oldest granddaughter, Jean, who was married about a year and a half ago, had her first child, a son, William Paul Davison, on that date, and of course his great-grandmother as well as all the other members of his family think he is 'tops.' The family, both sides, agree with us, though of course we are the only 'Greats.' Are there any others in the Class of '97? Sorry I cannot get to the reunions and their 'doins,' but I can't so that's that." — The Secretary wishes that any others of the Class advise him if they also are great-grandfathers. It seems from Ethan's letter that '97 men must admit that they are getting aged, must cancel their memberships in night clubs, must buy canes and carpet slippers, pick out a place by an open fire and stay put; especially if they are great-grandfathers. The Secretary is not, so he will still hang on to his night club's season ticket.

Edgar M. Hawkins, II, has retired from the Eastman Kodak Company of Rochester, N.Y., and has taken up his residence at 151 Atlantic Avenue, Cohasset, Mass. His arrival in New England coincided with the celebration of his 75th birthday. During World War II, much of his work was connected with the production of fire-control instruments for the United States Army. — Benjamin A. Howes, VI, who, until his retirement was connected with the United States Housing Authority in Washington, has left Washington with Mrs. Howes and has taken up his residence in East Hartford, Conn. His son, Benjamin T. Howes '39, is an engineer with the Pratt and Whitney Aircraft Company of East Hartford. If there are any '97 men in Hartford or vicinity, they should make themselves known to the Howes and give them a welcome. — JOHN A. COLLINS, JR., Secretary, 20 Quincy Street, Lawrence, Mass.

• 1898 •

Through the courtesy and co-operation of C. A. Clarke, Secretary of 1921, we have a clipping from the Newark *Evening News* of October 14 giving the following interesting bit of news concerning our classmate, Charlie Winslow: "At the 75th annual meeting of the New Jersey Health and Sanitary Association — at the evening session, Dr. C.-E. A. Winslow, editor of *The American Journal of Public Health*, discussed the history of public health in the United States." There is a group display picture of the president of the association with Dr. Winslow and another speaker. Don't be modest, Charlie, but let us know about your honors and other activities.

The following announcement appeared in the bulletin of Sunday evening programs of the Woman's City Club of Boston, Mass., for January, 1950: "Glimpses of Sweden and Switzerland — Color Movies — Jan. 15, . . . George T. Cottle is one of those lucky people who has been able to gratify his desire for travel. A graduate of . . . Technology, a chemist and engineer, after a successful business career, he retired and has been travelling more or less steadily ever since. He has been twice completely around the world and about twenty times to Europe. He has travelled by tramp steamer, by luxury liner, by air, and by private car and has explored many out-of-the-way places, taking pictures as he went. A trip to Sweden and to Switzerland last summer afforded him an opportunity to attend some folk festivals and to take some beautiful pictures which he will share with us." The Secretary and his sister attended the lecture. There was an audience of approximately 200 persons. The pictures were equal to George's best and his clear and entertaining comments added to the enjoyment, as evidenced by frequent and prolonged applause. — Van R. Lansingh has recently received the honor of being appointed "Member Emeritus" of the Illuminating Engineering Society. He was one of the founders of the society, serving as treasurer and president in 1912. Congratulations, Van!

The news of the moving of the Secretary to Marblehead has rung a bell in the minds of various classmates. Ralph T. Horton writes that he has a relative living in Marblehead. A bell, did we say? A whole orchestra with A. W. Tucker! Listen to this: "Amy and I are in Birmingham, Ala., on a holiday visit with our daughter and family and they have a comfortable home with plenty of heat and hot water and we are happy. We know Marblehead as well as I know my back yard in Daytona Beach. Our family history is all associated with Marblehead. My mother was a Snow — her father was Captain Joseph Snow in the China trade. Soon after my mother's birth, her mother passed on. Captain Snow was under clearance papers from the Marblehead Custom House, which in those days handled most of New England foreign trade. Captain Snow was in a 'jam' and William Coates, then custom officer, said, 'I'll take care of the kid; we have 12 at home now and one more won't make any difference.' The

Coates' home was on Front Street, still in the family, and my mother lived there until her marriage. Think date of mother's birth was 1849 and she was in Marblehead all during the Civil War when all captains held letters of reprisal. What is now Crocker Park, during my childhood, had many warehouses and she often told of playing with sea chests of coins and other tales of pirate doings! We have seen the harbor full of sailing boats, also with many United States big battleships at anchor. We know Tucker's Wharf, the Fort, the Neck and many other historical places. We plan to return to Daytona soon after January 1."

Thanks for the attractive New Year's greeting card, Albert, and for the newsy letter. Enclosed with the card and letter was a picture post card of a monument and statue, Vulcan on Red Mountain, Birmingham, Ala., showing veins of iron ore in the mountain side. On the card was the following description: "Vulcan, The Iron Man, weighing 60 tons, is the largest cast-iron statue in the world, and, with the exception of the Statue of Liberty, the highest statue in America. It was made to represent Birmingham at the St. Louis exposition in 1904 and was recently moved to its present location." Arthur comments as follows, "Certainly of interest to a Course III man. Have enjoyed seeing the mines, mills and smelters. This is a T.C.I. town under control of U.S. Steel. Daughter's home is near Vulcan location."

In late November, we received a card from Charlie Hurter, mailed from St. Petersburg, Fla., showing a trailer camp down Florida way, with an invitation to visit him in Florida. We have since learned of his recent passing. We have also been informed of the passing of Bob Wallace; and have been officially advised by the Alumni Association of the death of John F. Wessel on December 8, 1949. We can still see Bob Wallace in our mind's eye as he came up the path through the gardens of his summer home, "Braeburn" at Camden, Maine, late in the summer of '48. The Secretary and his sister and Dr. and Mrs. Furber were motoring from Machias to their summer home in Kennebunkport, Maine, and, midway, at Camden, stopped to call on the Wallaces. Highlighting this call on our classmate and his gracious wife, we will mention in addition to heartening conversation, a lovely view over Penobscot Bay from their porch, a delightful lunch and a visit of inspection through the rambling and attractive house. We have reached into the archives and found this card mailed by Bob on June 7, 1949, from Cleveland, just prior to the '98 get-together at the Algonquin Club on Saturday, June 11, 1949, which reads, "Am leaving for Maine, June 15. I will be unable to attend. Sorry. Good luck to you all." We hope presently to have more information concerning these classmates and others whose passings have been reported in previous class notes, all of which will be sent to the members of the Class either in the columns of The Review or in special presidential letters.

We have new addresses for George R. Anthony, Walter A. Cleaveland, and

George B. Southworth. — EDWARD S. CHAPIN, *Secretary*, 463 Commercial Street, Boston 13, Mass. JOSEPH C. RILEY, *Assistant Secretary*, 9 Pond View Avenue, Jamaica Plain 30, Mass.

• 1899 •

John B. Ferguson, whose professional history was outlined in the January Review, has called my attention to certain errors therein; not, as he says "that they matter to anyone, including myself, but just to set your record straight." Thanks, John, and here is a transcript of his corrections: "The name, J. B. Ferguson and Company, Engineers, was changed in 1920 to J. B. Ferguson and Company, Engineers-Constructors. During World War I, I was supervising engineer for Camp Eustis, several road projects and a balloon observers' school, all on the Virginia Peninsula. Finally, I have been a director of the Western Maryland Railway Company since 1938."

John states that he frequently sees Bernard Herman in Washington, D.C. He also ran into Bassett Jones, VI, recently at the Century Club in New York City and they reminisced at great length since they hadn't met since 1902. John says that he sees Carroll Brown, his old thesis partner, occasionally. The thesis dealt with plans for the elimination of a grade crossing at Arlington, Mass. Their plans must have been good for the thesis was one of those chosen to be read at commencement, and John was selected as the one to read it. But in June, 1949, your Secretary drove up Massachusetts Avenue and went through Arlington. Sad to relate, he had to wait for a train to pass over a grade crossing on Massachusetts Avenue. Was that the same grade crossing, John? John and Carroll were working together for awhile in 1942 at the Richmond Airfields and have been corresponding for the past half century. A bit unusual, eh, what?

Fred Waddell wrote to me on December 11 stating that he was going to Cleveland to spend the Christmas holidays with his son and would appreciate my informing him of Carroll Brown's business address in that city or his home address in Hudson, Ohio. This information was promptly sent; but when Fred arrived in Cleveland, he found that he had left the addresses behind. Fate was unusually kind, for the two happened to park in the same parking lot at identically the same time and recognized each other. Ripley, please take notice. — Burt R. Rickards, V, and H. Burdett Cleveland, C. E. (Union), both former officials of the New York State Department of Health, are now associated as public health consultants with an office at 381 State Street, Albany, N.Y.

Notice has been received from the Alumni Office of the death of Frank Riley, IV, on May 22, 1949. His address at the time the Alumni Register was published was 24 East Mifflin Street, Madison, Wis. Another death notice received through the same channels is that of Ross Hasbrouck, I, on September 30, 1949. The 1948 Register records him at that time as being assistant subcontracting engineer

and estimator for the Wiston-Abbott Corporation, 1225 South Avenue, Plainfield, N.J., but the notice gives his last address as Lookerman Avenue, Poughkeepsie, N.Y. — Burt R. Rickards, *Secretary*, 381 State Street, Albany, N.Y. MILES S. RICHMOND, *Assistant Secretary*, 201 Devonshire Street, Boston 10, Mass.

• 1900 •

Again it is necessary to make a change in our plans for our 50th reunion. We said last month that we had definitely decided upon our meeting place. We did this because the Lighthouse Inn had definitely agreed to take us. But when they came to make detailed arrangements, they found that their chef could not be free to come to them in time to open the Inn on June 5. And what would our reunion be without a cook! So we have had to make other arrangements. George Russell, who had found the Lighthouse Inn, got very busy and has found another hotel which he has visited and says will, undoubtedly, be even better for our purposes. It is The Pines at Cotuit. Cotuit, as you all know, is on the Cape just a few miles this side of East Bay. This change comes just as these notes are due and there is no opportunity to include more details here. But we hope that we will be able to get out a class letter giving full information. In the meantime, it will be very helpful if we can learn something of who and how many will come to the reunion. If there is any possibility of your coming, please drop a line to the Secretary at once telling him so. Up to the present time, Bill Hart is the only one who has done so. The names of those expecting to attend will be given in these notes from month to month so that your friends may know that you are coming.

Charlie Smith has sent a letter to all members of the Class about the class gift which we are to present to the Institute on Alumni Day next June. He has made a wonderful start toward raising this gift and now if each one will send him whatever contribution he can make, we will be able to make this gift one of which we will be proud. Charlie writes: "The class gift deserves the attention of every 1900 man between now and Alumni Day. Another letter will be received from the Class Agent, C. E. Smith. Donations can take many forms other than outright cash gifts. Names of donors can be kept confidential or released, as desired. Donations may consist of bequests in wills, insurance, promises of installments over two or more years, and so on. Horace Ford, Treasurer of the Institute, will be only too happy to advise by letter or in personal conference how bequests in cash, or otherwise, may be arranged. The important point is that our Class of 1900 turn in a result of which we can all be proud."

A press release dated Boston, December 20, says: "Former Rep. James D. Burns of Salem today obtained nomination papers at the office of Secretary of State Edward J. Cronin as a Democratic candidate for Congress in the 6th Congressional District. A special election will be held in this district on Feb. 14 to fill the vacancy caused by the death of Congressman George J. Bates, R — Salem. This will be Burns' fifth attempt to win this congress-

sional seat. He is a lifelong resident of Salem, former chairman of the Democratic City Committee and a former member of the City Council. He is an engineer and received his technical training at Harvard and M.I.T."

Another item from Lowell: "The 50th wedding anniversary of Mr. and Mrs. Edward F. Russell, pioneer members of St. Rita's parish in the Pawtucketville section who now reside in the Nabnasset Lake section of Westford, was observed on . . . [November 26] in the family circle. Mr. Russell and Miss Agnes Gertrude Kelly of Somerville were married on Nov. 26, 1899 at St. Joseph's church in Boston. They immediately took up residence in Lowell, native city of Mr. Russell. Prior to his marriage, Mr. Russell attended M.I.T. and upon returning to Lowell with his bride, he founded an electric motors firm in Fletcher Street. After a disastrous fire destroyed that factory, he became associated with the Heinz Electric company in a supervisory capacity, retiring from that firm a few years ago and removing to a home which he and his sons had built at Nabnasset's quiet lakeside. The couple has four children, Mrs. Francis M. Quinn, past president of the American Legion Auxiliary; Frank Russell of New Haven, Conn.; Mrs. John F. Kenney, past president of the Moody-Oakland-Pond Street P.T.A. and John R. Russell, Guadalcanal veteran and now of the carrier division of the Lowell postoffice."

William C. Pickersgill, of Newton Highlands, died on October 2, 1949. He has always affiliated with 1900 although he left the Institute and worked for a while, returning to get his degree in 1905. We have also learned of the death on November 9 of Thomas Nesmith, II, of Lowell, Mass. — ELBERT G. ALLEN, *Secretary*, 54 Bonad Road, West Newton 65, Mass.

• 1904 •

The drought which struck the water supply of many communities is echoed in '04 class news and your volunteer Secretaries don't even have the expedient of auxiliary supplies. — The press reports that Paul Paine is still roaming the country talking about "Valuation in the Oil Fields" under the auspices of the Association of Petroleum Geologists. Guy Palmer reports that he plans to come east for his high school class 50-year reunion and probably other members of the Class will participate in similar affairs this spring. Several reports indicate that the girls are not as enthusiastic for 50-year high school reunions as the boys. Wonder why?

Judging from Christmas cards, our 45-year reunion last June made a great hit with the wives who attended, which is pleasant to hear after our debating so long regarding whether to invite them or not. — The scarcity of news has even extended to deaths and retirements which is all to the good. None to report this time. Neither of your volunteer Secretaries is good at bedtime stories or other literary effusions; so if you want to read some class notes, send in the material. — EUGENE H. RUSSELL, JR., 82 Devonshire Street, Boston 9, Mass. CARLE R. HAYWARD, Room 8-109, M.I.T., Cambridge 39, Mass.

Most of the news for this issue comes as a result of a questionnaire sent out recently to get proper data for a complete listing of all '05 men with home and business addresses. This I intend to mail to all listed members of the Class as soon as the data is compiled, also a necrology of the Class. If those who have been sent questionnaires respond promptly, this should be in the mails at about the date of this issue.

Writing up an obituary, especially of one of whom you were very fond, is an especially difficult task and the last two months have been particularly difficult. Louis E. Robbe, I, died on January 10 at a hotel at Lake Worth, Fla., where he and Mrs. Robbe had arrived for a winter vacation only a few days before. Many of us knew that Louis had had a serious heart impairment for several years; but as we saw him at reunions, bubbling over with good cheer and love for his fellow man, we felt he would be ever with us, in spite of warnings to which he seemingly paid proper attention. He had planned to stay in Florida during the winter, returning for our 45th reunion in June. Copy of an obituary in a New York paper will give information, lacking to those who had not had the pleasure of meeting him recently: "Louis E. Robbe, sixty-eight, civil engineer who was in charge of construction claims and adjustment for the New York City Board of Transportation when he retired in 1946, died . . . at the Gulf Stream Hotel. Mr. Robbe and his wife, Mrs. Sophie Emberson Robbe, had arrived here for a visit three days previously. They lived at Chatsworth Gardens Apartments, Larchmont, N.Y. Earlier, as an assistant division engineer, Mr. Robbe was in charge of removal of the Second, Sixth and Ninth Avenue elevated railways, and as acting division engineer was in charge of construction of the Sixth Avenue subway. In all these positions Mr. Robbe's duty was supervision of private contractors whose bids were accepted by the city. During the First World War he was overseas twenty months with the Chemical Warfare Service and was a lieutenant colonel on discharge. In the recent war, he was promoted to colonel and was attached to the New York regional office of the Office of Civilian Defense. Mr. Robbe was graduated from Phillips Academy, Exeter, N.H., and . . . Technology. Before he joined the transit system in 1926 he was assistant engineer for the New York City Board of Water Supply on the Ashokan and Gilboa Dams, in the Catskill area. He was a Mason and member of the American Society of Civil Engineers, American Legion and Larchmont Men's Club. Surviving, besides his wife, are a daughter, Mrs. Roland Hemmett, a son, Fred G. Robbe, and a sister, Miss Alice Robbe."

Seymour M. Rivitz, I, died at the Baker Memorial Hospital, Boston, on January 19. For four years after graduation, he worked in Spokane, Seattle, and Tacoma on railroad developments and helped plan many of the approaches to the Alaska-Yukon Pacific Exposition. In 1909 he returned to Boston to enter the clothing manufacturing business with his brothers. He was a

past president of the N. E. Apparel Industries and was also active in the English High School alumni work. He leaves his wife Anna, a son and two daughters. T. M. Powers Potts, I, has been reported as deceased on February 12, 1948. His last address was Brook Royal, Albert Head, Vancouver Island, Canada. Also reported as deceased some time previously, is Richard O. Marsh, I. His last address was 3420-16th Street, N.W., Washington, D.C. John E. Lamb, III, address, 12 Paxton Road, Spencer, Mass., also is reported as deceased, with no date given.

Now to less depressing news learned through the questionnaires. Francis F. Longley, XI, Vice-president of Lock Joint Pipe Company, East Orange, N.J., tells a bit about himself. Says, "believe it or not" he has a wife who has lived with him 42 years, has two sons and two grand daughters-in-law, "but don't get them confused with one granddaughter and two grandsons." Member of A.S.C.E., American Water Works Association, N. E. Water Works Association, Institute of Engineers, Canada. Served six years on governing body of Maplewood, N.J. First World War, Distinguished Service Medal, Commander, Order of British Empire, Military Grade, Order of Etoile Noire France, Victory Medal. Fine work, Frank, wish we had known about it before. After getting his questionnaire, I looked up John E. Lynch, who had been working within a stone's throw of me for 25 years without either sensing it. Jack is senior design engineer for Stone and Webster Engineering Corporation, but will be retired on pension before this reaches you. Jack has been about the most interested class member regarding payment of dues, but has not for 25 years, at least, attended any reunions or class meetings.

Dez C. Schonthal, II, played on the M.I.T. varsity basketball team with me in 1903 (remember we had one then and practised nights in the old train-shed side of the Lenox Hotel?) and I hadn't heard from him for 45 years. Big Dez, our giant guard, is chairman of the board of the West Virginia Steel and Manufacturing Company, Huntington, W. Va. He has no children, threatens to attend our 45th reunion. Arthur F. Belding, II, is district manager of the Joy Manufacturing Company, 1000 Vermont Avenue, N.W., Washington 5, D.C. No other data, no comments. James E. Rogers, XIII, is design engineer at 39 Broadway, New York City, probably self-employed, as he writes that he tried ship design for a few years but changed to power house engineering. Jim has a daughter, a licensed professional engineer. Theodore Green, I, is president of his own construction company at 1019 White Building, Buffalo, N.Y., lives in East Aurora. "T" is a member of the American Society of Civil Engineers, National Society of Professional Engineers, Rotary Club, has four grandchildren.

Harry M. Nabstedt, I, retired in 1932, but the word is used figuratively as he seems to have been a very busy man since. He was employed by the Ambursen Construction Company for 26 years, designer, engineer and superintendent, manager of Santa Fe and Kansas City offices. Built 16 dams in the United States, Mexico and

Canada. Married in 1907, no children. Active in Masonic Bodies, Blue Lodge, Eastern Star, York and Scottish Rites, 33d degree Mason. Member of school board nine years, chairman five years. Chairman rationing board duration of the War, President Rotary 1949-50, Vice-president City Planning Committee. With all this, Harry adds that his health is good and that with many other interests, including real estate operator, he manages to keep busy all the time. Harry's address is 1028 West Ninth Street, Davenport, Iowa. Arthur J. Manson, VI, retired from Westinghouse Electric Corporation, Pittsburgh, Pa., in October, 1948, after 43 years of service. Moved to Houston, Texas, to be near his daughter and grandchildren. Art's son, A. J., Jr., M.I.T. 1934, is in the sheet metal business in Houston. Art keeps busy with lawn care, flower gardens, golf and his hobby, photography. His address, 539 West 34th Street, Houston, Texas. William H. Blakeman, XIII, retired from the United States Navy in 1949, during the last eight years of which he was with the United States Maritime Commission, chief inspector of new construction. Bill is a semi-invalid due to a heart attack in September, 1948, and "doesn't like being retired." His address is 1914 Connecticut Avenue, Washington, D.C.

Albert E. Sweetser, II, has two children both married, five grandchildren. Was with B. F. Sturtevant Company, Boston, for 30 years, from draftsman to assistant office manager, retired once, then called back and spent 10 years writing 250 books on auxiliary turbines for the Navy. Retired again in January, 1949, "this time for keeps." Al is apparently having a grand time with woodworking tools, making furniture, planning a machine shop, and so on. Spent 20 years in Masonic work. Now intends to travel. Al's address is 160 Lincoln Street, Newton Highlands 61, Mass. Albert G. Prescott, also Course II, also from Newton, Mass., is planning semiretirement, since his son, Donald, "is taking over the business," the A. W. Banister Company, Cambridge, Mass. Write him ordinarily at 278 Lake Avenue, Newton Highlands, but during part of the winter at Hollywood, Fla. Harry R. Gabriel, I, is another fellow who couldn't stand retirement. He spent his first seven years after graduation in Alaska on the location and construction of railways, then to Argentina and Uruguay on the same type of work. In 1917 he went overseas with 21st Regiment of Engineers (railway), being promoted to major. After the Armistice, went to Czechoslovakia and Poland as a member of the Hoover Advisory Mission to the Polish Ministry of Railways. Returning to the United States in 1921, Harry then went to Bolivia as chief engineer on the location and construction of 220 kilometers of meter gauge railways connecting the Bolivian and Argentine systems. In 1926 he joined the bridge division of the New Jersey State Highway Department, remaining there for 22 years on the construction of many important bridges in the northern part of the state, among these being the Pulaski Skyway. In 1948 he retired from the New Jersey State Highway Department, moved to Cincinnati with the idea of retiring permanently. A few

months of uneasy retirement sent him back into the construction field and he is now happily employed with the engineering forces of Hamilton County, Ohio. Business address, Court House, Cincinnati, Ohio.

Harry Wentworth, VIII, has not improved in health as hoped. Mrs. Wentworth reported that he had had another stroke last spring, which confined him to his bed for several months, that he was up and around in January but found locomotion very difficult, hoped to get him to Florida soon in the hope of quicker recuperation. Cheer up, Harry, we're all pulling for you. — FRED W. GOLDTHWAIT, *Secretary*, 274 Franklin Street, Boston 10, Mass. SIDNEY T. STRICKLAND, *Assistant Secretary*, 69 Newbury Street, Boston 16, Mass.

• 1906 •

Your Secretary and Mrs. Kidder enjoyed looking over the numerous Christmas cards from classmates, some of which were accompanied by notes which are quoted below. From George Hobson: "Seasons Greetings from the polar regions of South Portland, Maine, and I love it. Am doing pretty well on the whole except that about three months ago I had an embolism in a vein in my right leg which the doctor cleared up and said that he would give me an injection that would prevent a recurrence." If the Secretary recalls, one of the reasons why George located in Maine was that he was fond of snow. Chester Hoefer, who is in Boston, submitted the following: "So sorry we missed the reunion this year because we went behind the iron curtain and spent part of our European summer in Prague, a most revealing experience." Ralph Patch and Henry Ginsburg spent Christmas at their usual haunts in Florida. If Abe Sherman did not, he is at Sarasota at this writing and Frank Benham is in Miami. Frank started south about the 10th of January. Obviously, by the time you read this, which will be in March, some of these people may have returned to their northern homes.

In a letter of December 19, Terrell Bartlett acknowledged our Christmas card and expressed best wishes for the Holidays and for a happy 1950. To quote further from Terrell's letter: "We hardly think we will come to Boston in June for our niece's commencement at Wellesley but are looking forward to the 45th reunion in 1951. I am really building that house but it goes so slowly; but no matter, as we are very comfortable here in my father's home." It is nice to know that Terrell is already thinking of the 1951 reunion. It is not too early to be thinking about it so keep in mind that next year, or about 16 months from now, we should be enjoying our 45th reunion. Reflections along these lines indicate that it will probably take the usual pattern of a sojourn at some place on Cape Cod about the time of Alumni Day. The Secretary would welcome any ideas from classmates in this connection.

Ordinarily, the Secretary does not record address changes in these notes but

two have been received which we think will be of interest: Henry S. Hubbell of Box 148, Conway, N.H. Henry was with the United Shoe in Boston for a great many years and resided in Dedham, Mass. This change is probably an indication of his retirement to the White Mountain area. Sid Carr, who spent most of his working years in Honolulu with the Hawaiian Electric Company now reports an address of Route 2, Box 808, Los Altos, Calif. Classmates will recall that Sid retired in 1946, came back to this country and made an extensive tour of the States, including the east, and some of us had the good fortune to see him when he was in New England. Since that time, his address has been in care of Wells Fargo Bank and Union Trust Company, San Francisco. This new address would seem to indicate that he has decided to settle down in Los Altos. The Secretary reflects that some readers might inwardly smile and say if the Secretary were a better correspondent he would not have to rely upon so many deductions in these notes. The Secretary might add and hereafter goes on record with a New Year's resolution he has made to improve his performance in this respect. To date, we have at least one letter to our credit, to Terrell Bartlett, and now that we have broken the ice, the rest should come easier.

Members of the Alumni Association will be interested to note Ned Rowe's name appearing on the ballot for the Alumni Council. Ned has served the Class very faithfully in this office and has expressed his willingness to continue as our representative. Classmates should appreciate the work he is doing for us in this connection.

Under date of January 3, a letter was received from Thomas G. Webber, Jr., of Edgewood, R.I., advising of the death of his father, our classmate, Thomas G. Webber, II. His son wrote that his father had been in the public utility field nearly all his life, having worked for Stone and Webster for about a dozen years and for the Narragansett Electric Company in Providence for the last 25. The Secretary recalls Tom in the Institute, but he had not taken much part in class affairs since graduation.—JAMES W. KIDDER, *Secretary*, 215 Crosby Street, Arlington 74, Mass. EDWARD B. ROWE, *Assistant Secretary*, 11 Cushing Road, Wellesley Hills 82, Mass.

• 1907 •

Under date of January 1, I received from James M. Barker, whose address is 1430 Lake Shore Drive, Chicago 10, Ill., a most interesting letter from which I quote: "In late November, 1948, Overseas Consultants, Inc., asked me to go to Iran with three of their senior partners to look over the situation in connection with their prospective work in that country related to the 'Seven Year Plan' of which you may have read in the papers. I was there a fortnight and traveled around Persia, as Iran used to be called, a good deal. In March, John Burchard asked me to take a part in the Mid-Century Convocation panel at M.I.T. on 'Men Against Men,' which concerned itself with the problems of so-

called backward countries. This was after my return from a month in South America in February and March, primarily to attend the opening of our new Sears Roebuck store in São Paulo, Brazil, following which my wife and I visited Buenos Aires for the first time since we left in 1928, flying back by way of the West Coast and Central America. In late April, the matter of my returning to Iran with the Overseas Consultants group to handle the economic section of their very comprehensive study of Iranian conditions came up, and my wife and I flew over for the month of May to handle that responsibility. Our classmate, J. E. Moore, was there at this time as their expert on power, although, regretfully, I did not realize our class relationship at this time. We did not get back to the States until the time of the class reunion last June, and I was so completely tied up with my economic report as well as catching up with my responsibilities in this country, that I had to forgo the much anticipated pleasure of being with you all. In September the International Bank for Reconstruction and Development asked me to head an economic mission to Turkey for them, and my wife and I left by air in early November and spent six weeks in that fascinating land. We had visited it first in 1928, and the Turks have made amazing progress in the intervening decades. As things look now, we shall return to Turkey for the next phases of the survey probably in early February; but as I have a good many things to handle in the United States, I shall probably get back monthly to take care of them. As the air journey to Istanbul is only about 24 hours from New York, the trip is a relatively easy one.

"I see that in the new list of members of our Class you have me down as retired, and I thought you might be interested in a bit of detail of my retirement. I am, of course, chairman of the Board of Allstate Insurance Company, which is the wholly owned automobile insurance subsidiary of Sears Roebuck and Company, with assets approaching 60 million dollars. I am a director of Sears Roebuck, Allis Chalmers, the Chicago, Milwaukee, St. Paul and Pacific Railroad, the Harris Trust and Savings Bank of Chicago, and Universal Oil Products. I have kept up my interest in education as a life member of the M.I.T. Corporation, the Board of Trustees of Northwestern University, and of the American School of Prehistoric Research. Other trusteeships are for the Newberry Library of Chicago, the Museum of Science and Industry, and the Chicago Zoological Society."

As of December 28, 1949, M. Herbert Eisenhart, who has been president of Bausch and Lomb Optical Company of Rochester, N.Y., since 1935, became chairman of the board. Herbert has been associated with this company in important executive capacities since 1917. He was vice-president and general manager when in 1935 he was elected president. He is also chairman of the Board of the Trustees of the University of Rochester and the director of other Rochester companies, including the Rochester Gas and Electric Company, Taylor Instrument Companies, Rochester Telephone Corpo-

ration, Security Trust Company, and the Rochester Savings Bank. For many years, he has been a leader in many community affairs. — Through the courtesy of Charles R. Bragdon of our Class, I receive quarterly copies of *Interchemical Review*, which is published by the Research Laboratories of Interchemical Corporation located at 432 West 45th Street, New York City. Charles is a member of the editorial board of this publication. In the most recent issue that I have received, it is noted that our classmate was installed as chairman of the division of paint, varnish, and plastics chemistry of the American Chemical Society at their annual meeting last September.

On November 20, 1949, Raphael Gay Hosea died, according to a clipping from the Los Angeles *Herald and Express* of November 25. Hosea was associated with our Class in the Course in Civil Engineering. I have never been able to secure any information as to his activities since 1907. His address at the time of his death was 635 South Hudson Avenue, Pasadena 5, Calif. The clipping referred to above reads as follows: "A trip to South America at the invitation of students he had befriended ended fatally for Raphael Gay Hosea, 66, well known civil engineer, it was learned yesterday with the arrival of his widow, Ethel Crum Hosea, at their Pasadena home, 635 South Hudson Avenue. Hosea, during the war was a consulting engineer for the Civilian Corps of Army Engineers with headquarters in Los Angeles, and helped a group of South American students attending the California Institute of Technology with their English. Now graduate engineers, they invited him to visit them in South America. Mr. and Mrs. Hosea sailed early last summer and were returning by boat when the husband became ill and died last Sunday in the Balboa canal zone. He was a member of the American Society of Civil Engineers." — I also have a notice of the death on December 21, 1944, of Elmer J. Krafft, who was with our Class for a short time in the Course in Architecture. The notice of his death was received from his brother who was associated with him in the concern, J. E. Krafft and Sons, of San Francisco, Calif. — BRYANT NICHOLS, *Secretary*, 23 Leland Road, Whitinsville, Mass. PHILIP B. WALKER, *Assistant Secretary*, 18 Summit Street, Whitinsville, Mass.

• 1908 •

The second dinner meeting of the Class for the 1949-1950 season was held at the Thompson's Spa Club Grill Room on January 17, 1950, at 6:00 P.M. The following were present: Stiles Kedy, Winch Heath, George Freethy, Myron Davis, Henry Sewell, Jeff Beede, George Belcher, Les Ellis, Sam Hatch, Linc Mayo and Nick Carter. We had expected to show moving pictures but Karl Kennison was attending the meeting of the American Society of Civil Engineers in New York and Joe Wattles had Rotary and a birthday party for his grandchildren. After considerable discussion, it was decided to hold a 42d reunion in June just before Alumni Day. You will receive more details by mail.

An excerpt from *Nation's Business* for August, 1949, refers to William B. Given, Jr., President of American Brake Shoe Company, as a "boss of the 'old school' who not only knows each of his foremen by name but has visited in most of their homes. That is why a booklet of his sayings just issued packs so much homey wisdom. The Given aphorisms have come to be used in the company 'instinctively as a guide in measuring day to day decisions.'" — Willard F. Rockwell spoke at a luncheon meeting of the Advertising Club of Boston in the Hotel Statler, Boston, in December, 1949. "The strengthening of free enterprise through advertising was his subject. As chairman of the board of Standard Steel Spring, Col. Rockwell has been responsible, with R. C. Enos, the concern's president, for initiating and carrying out an outstanding advertising program in defense of the American way of doing business. Sixty-one newspapers were used for full-page warnings against government intrusion and for expositions of free enterprise." The preceding is quoted from the Boston Sunday *Herald* of December 11, 1949.

The third dinner meeting will be held on Tuesday, March 14, 1950. Reply post cards will be mailed as usual. — We have received changes of address for: Leslie B. Ellis, Bradford B. Holmes, and Rens E. Schirmer. — H. LESTON CARTER, *Secretary*, 60 Batterymarch Street, Boston, Mass.

• 1909 •

We have learned that Tom Desmond, I, has recently been elected a member of the National Institute of Social Sciences and also a member of the Council of the National Municipal League. — In the January 19 number of the Cambridge *Chronicle-Sun* was a photograph of Brad Dewey and seven other Cambridge men who had been with the Dewey and Almy Chemical Company for 25 years and more. There are 22 men in all who have become charter members of the newly organized Quarter Century Club. Awards of gold pins and engraved watches were made to each. — We have learned that Cy Young, II, the manufacturer of Acushnet golf balls at New Bedford, Mass., purchased a home in Florida last spring. He and the family went there about November 1 and returned for the Christmas holidays, but went back again for the winter months. Cy states, emphatically, that it is not a vacation and that he is not retiring. In fact, he is working harder in Florida than at home.

It is with regret that we report the passing of Felix A. Burton, IV, who died on November 28 at the Peter Bent Brigham Hospital in Boston. He was in his 65th year. Before coming to the Institute he graduated from Bowdoin College in 1907. Our records show that aside from brief sojourns to Portland, Ore., Brooklyn, N.Y., and Brunswick, Mass., shortly after graduation, he has lived almost continually in Newton, Mass., and practiced architecture in Boston. He is of particular interest to us for he is the son of the late Dean Burton of whom we all were so fond. He was also the brother of Har-

old H. Burton, now Associate Justice of the United States Supreme Court and formerly United States Senator from Ohio. He also leaves his wife, Mrs. Helen E. Burton, a daughter, Mrs. John Lentz of New York City, another brother, A. Ross Burton, and two sisters, Mrs. Francis Brailard and Mrs. George Demetrios.

From Molly: I regret that I must first report the death of Eddie Almy on January 4, 1950. The Newark *Evening News* carried the following account of his career: "Mr. Almy, who died in his home. . . after a long illness, was an assistant chief engineer of the Sinclair Refining Co., New York, and had been with the company about 35 years. He was 63. Born in Tiverton, R.I., he was graduated from. . . Technology in 1909. After silver mining in Mexico from 1912 to 1914, he joined Sinclair. He moved to Glen Ridge in 1936. He was a member of the American Society of Civil Engineers. He leaves his wife, Mrs. Bereniece Lathrop Almy, and a son, John D. of Glen Ridge."

It is a real pleasure to report that Chauncey Crawford, who was painfully injured in an accident last summer but who has now completely recovered, was to be married on January 28 to Mrs. Pauline V. Dean of New Canaan, Conn. — Royce Gilbert and Mrs. Gilbert, who have lived in Wilkes-Barre for a number of years, have now moved to New York where Royce is embarking upon the practice of consulting engineering. Their new address is 237 Park Avenue, Tuckahoe 7, N.Y.

A long letter from A. B. Morrill dated December 17 has just arrived, containing much interesting news of his activities as a member of the World Health Organization in Shanghai, with side lights on the Chinese situation told in his inimitable fashion. Extracts from his letter follow: "You should see me now, all decked out in a long blue satin Chinese robe, lined with black lambskin! I finally broke down this winter and had one of these garments made; they are supposed to be much warmer than any kind of foreign clothes in which you can move and be comfortable. It is 47 F. in my room just now and we go slow on lighting the fire in the stove, with hard coal at \$50 a ton. I have a fire from about 4:30 every afternoon, when I get home from the office, and would have one now but I am going out in a little while. The other inhabitant of our mansion, a thrifty Minnesota W.H.O. nurse, is so economical with the organization's coal that it shames me into doing without a fire sometimes when I otherwise would have one. . . . The black lambskin was given me three years ago by Ma Pu-fang, the baronial Mohammedan governor of Chinghai (Koko Nor) Province, up on the fringe of Tibet. He is rated as a 'war criminal' by the new government. This term seems to mean an important person on the other side, which seems to me an unfortunate semantic deviation. His Chinghai soldiers fought a lot harder than most for the Nationalist cause but were overcome and the governor flew off to Hong Kong, whence he went on a pilgrimage to Mecca. I hope the criminality does not extend to his black lambskin. When Governor Ma is judged, whether by Allah or the Commu-

nists, I hope that he gets at least one good mark for his enthusiastic support of a piped water supply for his capital city. The civil war prevented the plan from going ahead but I still hope to see the system built.

"As for the new regime here, one could write a book on the subject, including some cons, but on the whole it seems to be doing well in difficult circumstances. Inflation got loose again recently and prices tripled in about a month, but they are now under control again. If I were a Chinese rural landowner, I, doubtlessly, could not be philosophic about having my land taken away from me. I probably would consider it plain robbery, even though they left me a share rather larger than the average in the village. But except for the rural landlords, it seems that it is going to be possible for most Chinese to be reconciled to the new government. There is quite a lot of socialism in its planning, like the recent nationalizing of the export trade in hog bristles, one of China's chief exports. The internal trade and processing is to remain largely in private hands. According to the newspapers, which of course are one-sided, rich businessmen are coming back from Hong Kong and hopefully planning for the future. Even after you have searched diligently between the lines and listened intently for underground rumors, the claims still stand up pretty well. Now the new regime seems truly to be trying to improve the lot of the laborers, but at this stage of the game they are convinced that making the boss go busted is no way to do it. So we see labor unions asking that wages be reduced, so that the outfit can keep going. How democratic or how inspired these requests are, I am not sure, but the object seems to be a proper one. The labor bureau of the municipal government is working out as a sort of arbitrator between the workers and the employers. In recent months its influence seems to have been as often to help the employers as the laborers. In some cases they surely needed help."—PAUL M. WISWALL, *Secretary*, 527 Belleville Avenue, Glen Ridge, N.J. CHESTER L. DAWES, *Review Secretary*, Pierce Hall, Harvard University, Cambridge 38, Mass. *Assistant Secretaries*: MAURICE R. SCHARFF, 285 Madison Avenue, New York, N.Y., GEORGE E. WALLIS 1606 Hinman Avenue, Evanston, Ill.

• 1910 •

All classmates will have received Cliff Hield's reunion broadcasts by the time these class notes are read. Cliff has done a wonderful job and we are assured of having one of the largest turnouts with the finest program any class ever had for their 40th reunion. The fact is that Cliff has worked so hard on this job that in March he is taking a trip to Hawaii to rest up and develop further ideas to make this reunion something never to be forgotten for those who attend. If any classmate has had misgivings about attending, he had better forget them and write Cliff that he will attend the entire affair.—George Mylchreest will be at the reunion and writes as follows: "A little news about myself. Since graduation, I have been located in Hart-

ford, Conn.; for 13 years I was a member of a firm of consulting engineers, for the past 20 years I was a member of the firm of Mylchreest and Reynolds and for the past seven years, since my partner died, I have been sole owner of the firm. My work has been largely design and supervision of industrial plants chiefly in Connecticut. I was married in 1911 and have two children and four grandchildren. My son attended Technology and was graduated in 1936. He is associated with me."

Paul Hopkins, who has lived in China since he graduated, has again been involved with the turbulent conditions of that country as published in the Boston *Traveler* of December 9: "The freighter Sir John Franklin which was shot up by Chinese warships on her way into Shanghai was permitted to run the Nationalist blockade seaward today. A Nationalist warship stopped her at noon and Chinese Nationalists boarded the Isbrandtsen Co., Inc. of New York freighter. But they permitted her to proceed to sea. Among the 15 passengers were Paul Hopkins of Boston, manager of the Shanghai Power Co., and Fred Flanley of New York, manager of the Shanghai Telephone Co., who were prevented from leaving Communist Shanghai earlier in the autumn. Hopkins, the son of Dr. N. S. Hopkins of Boston, was at one time associated with the Standard Oil Co. of New York, being the company's North China manager with headquarters in Shanghai. He is an M.I.T. graduate. In 1908 he was married to Miss Antoninette Jefferson Wood of Brookline."

Herb Reynolds writes as follows: "With all three children married, the large farmhouse seemed too big, so we sold out this summer and bought a little place on a little lot. After the War, the doctor found my arteries to be considerably older than I am so have had to slow down very materially. Am chief engineer for San-Equip, Inc., and its subsidiary, Heatilator, Inc. Interesting but not too exciting. We are the largest manufacturers of steel septic tanks and steel circulating air fireplaces in the country and cut up about 50 tons of sheet steel per day, so manage to keep busy. Would like to make the reunion but can't be sure yet—will try."

For those who have not sent in their class dues I would like to say the treasury is receptive for checks or cash.—HERBERT S. CLEVERDON, *Secretary*, 120 Tremont Street, Boston, Mass.

• 1911 •

Once again a fine group of '11 men in the Metropolitan area greeted me at luncheon in the M.I.T. Club of New York during my yearly early January visit to Big Town for the annual National Retail Dry Goods Show and convention of the American Retail Association Executives, of which I am a member. Arrangements were in charge of Class President Don Stevens, assisted by Phil Caldwell, Dick Gould and Harry Tisdale. An interesting talkaround featured the affair, each classmate being asked to state the number of grandchildren he had; a tie for first place at five each developing among Arthur Brown, Larry Odell, Walter Welch and Dennie.

Royal Barton, VI, continues as rate consultant for Ebasco Services and reported four grandchildren. G. Arthur Brown, X, now assistant director of the School of Leather and Tanning Technology at Brooklyn Polytechnic Institute, said he is enjoying his new work immensely, following war service with the Quartermaster General's Office in Washington. He gave me an interesting brochure on the work at B.P.I., which showed Phil Caldwell as a member of one of the institute's visiting committees. Arthur also told us that Norman Duffett, X, has just retired after nearly 40 years of service with the Electro Metallurgical Company at Niagara Falls, N.Y. Norm and his wife are wintering in Florida but plan to continue to make their home in Niagara Falls.

Phil Caldwell continues with Robertson Paper Box Company and has three grandchildren. He said he met Howard Williams, XI, in the elevator at the Graybar Building that noon and Zeke expressed deep regret that a business engagement prevented him from attending the luncheon. Jim Campbell, I, like Phil, a fraternity brother of mine, reported that business was booming with his Eadie, Freund and Campbell engineering firm and reported no grandchildren.

Joe Gershberg, VI, reporting two grandchildren, said he was about to complete 26 years with the Consolidated Edison Company of Brooklyn and plans to retire next Christmas. Dick Gould, XI, chief sanitary engineer of the New York City Department of Public Works, reported two grandchildren. Joe Harrington, VI, is with the Enjay Company at 15 West 51st Street—a subsidiary of Standard Oil Company of New Jersey, whose vice-president, Bob Haslam, X, sent regrets, also. Joe and Rose, who live in Larchmont, have no grandchildren. Mert Hopkins, I, continues in construction and engineering with Fraser Brace and Company in New York City. He has one grandchild and reported a change of home address from Old Greenwich to 20 Church Street, Greenwich, Conn.

Bart Nealey, I, is now with Gotham Labs, 420 Lexington Avenue, manufacturing pharmaceuticals. He is still living in Wilton, Conn., and has no grandchildren. Larry Odell, XIV, has reorganized, and, with one of his sons, is again operating Odell and Sons, Ltd., Room 305, 299 Madison Avenue, New York 17. They are distributors of paints, lacquers and chemicals, domestic, import and export. Currently, they are supplying the departments of health of Iraq and Ethiopia. Like myself, Larry has a daughter now recovering from polio and both of us were happy to report satisfactory progress.

Dick Ranger, VIII, said that Ranger-tone is going great guns and right now his metallic tape sound-recording is being widely used in moving picture and television fields at one-tenth of the cost of other sound-recording devices. It was used to fine advantage in the movie, "Lost Boundaries" and there are laboratories now in Hollywood, Chicago, New York and Ottawa, Canada. He has four grandchildren. Pat Russell, II, is still in real estate with Horn and Burke and reported no grandchildren.

Johnny Scoville, IV, continues with Sanderson and Porter in New York City, spending week ends at his home in West Hartford, Conn. He has no grandchildren. Nat Seeley, II, still living in Stamford continues as personnel director for the Cornwall and Patterson Company, Bridgeport, Conn., of which firm he is vice-president. He and Louise have two grandchildren.

Don Stevens, II, reported that all of the Okonite plants — for which organization he is vice-president in charge of operations — are not only busy but that labor conditions continue excellent. He and Lois have one grandchild. Harry Tisdale, V, reported that things are fine with the American Dyewood Company and that he was now midway through *General Kenney Reports* and enjoying it hugely. He and Grace have no grandchildren.

During my talk to the group, I spoke of my pride at 1911's continued fine showing in Alumni Fund campaigns. Although the final figures for 1949's nine-month abbreviated campaign — the Development Program holding complete sway during 1950 — have not yet been released, they doubtless will be by the time this issue reaches you and, classmates, take a look at the figures and see if you're not proud of 1911. I also was delighted to have a recent letter from George Kenney, I, setting at rest rumors that he had pneumonia, which reads: "Thanks for the card and good wishes, but you might just as well quit worrying about me and pneumonia. The story is a bit exaggerated. The facts are these: About the middle of October I picked up a bad cold while in England and on arrival in Paris October 20 went to the American Hospital at Neuilly for four days, where they stuck me with penicillin every three hours to stop pneumonia from developing. I couldn't have been too sick, as from Paris I went to Rome, to Dakar, to Rio, to Panama, to Mexico City and was back here at Maxwell Field (headquarters of the Air University which he heads) on November 7. A mean cough stayed with me until Christmas, so the docs have told me to stay around the sunny south for a while. That edict made me miss Dorothy Glazier's wedding, but I'm a long ways from being washed up."

Sellie Seligman, III, Erv Young, I, and Rufe Zimmerman, IX, all sent regrets; and Lester Cushman, IV, recovering from a heart attack suffered Christmas Day, was also unable to attend.

I spent the night before with Don and Lois Stevens, their son, Carver, and Don's mother, in Ridgewood, and, of course, a fine reminiscing party developed. Don showed me an exchange of correspondence he had had with Minot Dennett, II, who operates the M. S. Dennett Company in Detroit, and who was a Brookline schoolmate of Don's. Don said he remembered taking an enforced jump from Minot's hayloft onto his concrete drive and also well remembered the gym up in that barn; to which Minot replied that he well remembered his brother's barn and the fun they had had there — also "stamp collecting and many other happy events of that era." He added that his sister had sent him a 1950 New England calendar for Christmas which had an excellent picture of the country store at Adamsville, R. I.,

where Don had visited Minot one summer after grammar school closed. "The store is the place," Minot wrote, "where I worked for the following two summers at \$5 and \$6 per 60-hour week, respectively. Them was the happy days!"

In the December 12 issue of *Life* appears a two-page article titled "New Telephone — Exhaustive Research Produces New Shape and Controlled Ring." On the first of the two pages is a photograph of the creators of the new telephone, Stephen Henry Dreyfus and Engineer William Hennick Martin, VI, Bell vice-president. In re the newest version of an effective telephone, it says, in part: "Almost all of its 400 parts have been redesigned. An automatic equalizer has been added which helps keep the sound volume uniform no matter how far away the phone is from the central exchange. A manual control on the base permits the user to adjust its ring to any intensity from a loud clang to a murmur. To make it easier to service, all machined parts are attached to the phone's base, instantly accessible when the outer shell is lifted off. For easier visibility the exchange numbers and letters have been put outside the finger wheel and in their place white dots have been located under the finger holes as targets to increase speed and accuracy in dialing." Nice work, Bill — how's for a new phone?

Louis Grandgent, IV, Public Housing Administration architect at Atlanta, Ga., discussed planning sites and units with Florida architects and civic leaders at a housing seminar in Daytona Beach in mid-November. Louis, we learn, has been and is doing some special research in housing design and standards with the P.H.A. and in the past has developed such projects as the campus plan for Antioch College in Ohio and the town plan for Norris, Tenn., under T.V.A.

In mid-December Johnny Bigelow, IV, city engineer at Marlboro, suffered the loss of his mother, a fine 81-year-old descendant of John and Priscilla Alden of Plymouth, and early Marlboro and Framingham settlers. In addition to his duties as city engineer, John is also custodian of city property and has been re-elected secretary-treasurer of the Marlboro Chamber of Commerce. In nearby Leominster, in late December, Bernard W. Doyle, former mayor, industrialist, banker and philanthropist, died. Among the honorary bearers at the funeral was President Carl S. Eil, XI, of Northeastern University.

New mail addresses include those for Edgar L. Woodward, VI, and G. Arthur Brown. An important address to remember is East Bay Lodge, Osterville, Mass., for at that fine hostelry on the second week end in June, 1951, M.I.T. 1911 will hold its 40-year reunion and you should plan to attend this family party of ours. — ORVILLE B. DENISON, *Secretary*, Chamber of Commerce, Gardner, Mass. JOHN A. HERLIHY, *Assistant Secretary*, 588 Riverside Avenue, Medford 55, Mass.

• 1912 •

Echoes of the reunion last year are still coming in. Max Levine, VII, Chief of the Bureau of Laboratories, Department of

Health, of the Territory, writes: "Sorry we had to change our plans and thereby had to miss coming to the 1912 class reunion. I hope to be able to make it in 1952 for the 40th anniversary or bust. How time does fly. Little did I think that I would participate in two wars and end up in this isolated island, when we bent over books on Boylston Street. It is really very pleasant here, but there is a feeling of isolation, and we miss seasons."

Industry, the official spokesman of industry in Massachusetts, has a long write-up in the January 3 issue about the Lewis-Shepard Company, of Watertown. It tells about industrial progress being revolutionized by the mechanical handling of materials, how the Lewis-Shepard Company pioneered in the development of handling equipment, and is still holding world leadership in this highly specialized field. It pays tribute to the inventive genius and administrative ability that characterize A. L. Lewis, President, and Frederick J. Shepard, Jr., Treasurer. The illustrations are especially interesting.

The New York *Times* of December 17 reported: "Miss Elaine White, daughter of Mr. and Mrs. Lester M. White of Niagara Falls, N.Y., was married here yesterday to Silvio F. Senigallia, son of Admiral Renato Senigallia, Italian Navy, retired, of Rome, and the late Signora Senigallia, in the Crystal Suite of the Savoy-Plaza Hotel. The ceremony was performed by Supreme Court Justice S. Samuel Di Falco. Miss Elizabeth Owen was maid of honor and Walter Foa was best man. The bride, an alumna of Wellesley College, is an associate editor of *Woman's Day* magazine here. Mr. Senigallia was graduated from the University of Rome, served as a special agent with the Counter-Intelligence Corps of the United States Army during the war and is with the 'Voice of America' of the Department of State." — Handsome pictures of Fred Barker and Erwin Schell grace the pages of the *M.I.T. Development Program News*. Fred Barker is chairman of the Syracuse area and Erwin Schell spoke on behalf of the program at a dinner in Springfield.

Jim Cook, VI, gives us the following news of his activities: "I have not done much during recent months with photography because of the pressure of business and family affairs. I flew to Chicago recently to attend the annual American Gas Association Conference and saw Harry Dexter there. I think I have already told you of this. Last week, I made a second trip to Washington, in connection with the development of Lynn Harbor. I shall go to New Haven this week end to see my daughter and her family, which includes two grandchildren. Then, too, as you know, we are in the midst of a most interesting change in our method of gas manufacture with a program of major construction to be completed in 1950. During that year we shall also change the thermal content of the gas to 1,000 B.T.U. Since I wrote you last on this subject, I find we can expect plenty of trouble next year since we cannot avoid inconvenience to many of our customers during the change." — FREDERICK J. SHEPARD, JR., *Secretary*, 31 Chestnut Street, Boston, Mass. LESTER M. WHITE, *Assistant Secre-*

• 1914 •

A delightful letter has been received from Rucker Bristow, principally telling about a trip he took to California following the reunion at Pine Orchard. While in Los Angeles, he looked up our classmate, Ralph Wells, whose home is in Greater Los Angeles. Rucker writes that Casey is living in a lovely rambling California house with a large yard with typical semitropical growth covering it. Casey's daughter was being married in the very near future. Wells will be very glad to see any '14 men getting out his way, but Rucker advises that anyone planning to call on Casey had better telephone him first and ask him to meet you on some well-known street corner. Casey's house is reported by Rucker as being one of the hardest things in this world to find. Rucker himself is continuing to do nicely with his company, Juice Industries, Inc., which succeeded his former company, Citrus Concentrates, Inc. They are located at Dunedin, Fla.

The local papers have carried notice that Major General Thomas H. Green, who has been the Judge Advocate General of the Army, has retired and entered the law business in Massachusetts. With his retirement, Major General Alden Waitt's retirement from the Chemical Corps, and Brigadier General Joe Wood's retirement from the Corps of Engineers, 1914 has lost some of its high standing with the top Army brass.

George Whitwell continues to make the headlines. This time the press has taken notice of George's retirement as a member of the Laboratories Managing Committee of the American Gas Association. He had rendered 21 years of service on that committee, including six years as chairman. Although for many years George has been vice-president in charge of sales at the Philadelphia Electric Company, he is equally at home in the gas industry and is coinventor of the Young-Whitwell back-run gas process. George has been very active in public affairs, and together with the mayor of Philadelphia, he appears on the front cover of the January issue of the magazine featuring junior achievement. In the picture both the mayor and George appear to be very much interested in a handsome young lass who is running a lathe under the junior achievement program.

It is your Secretary's sad duty again to report the death of a classmate. Bayard H. Waterbury died in Oil City, Pa., on December 15. Waterbury's home town was Centerville, S.D., but he had spent most of his time since leaving Course II at the Institute in the oil areas of Pennsylvania, making his home in Franklin, Pa. He had been superintendent of the former Eclipse Works of the Atlantic Refining Company, and later superintendent of the Wolf's Head Oil Refining Company. Waterbury was married on November 18, 1915, to Florence C. Chaney. He is survived by his wife and his son, Bayard H., Jr. — H. B. RICHMOND, Secretary, 275 Massachusetts Avenue, Cambridge 39, Mass. Ross H.

• 1915 •

From east to west and north to south, 62 classmates tentatively plan to come to our 35th reunion, June 9–11 at Coonamessett Lodge Ranch, North Falmouth, on Cape Cod, Mass. This gives you a chance to return to Boston on Monday, June 12, visit M.I.T., bring your lady guests to the monster class cocktail party at the Copley Plaza Hotel, at four o'clock Monday afternoon and then go to the Alumni Dinner there that night. Plan to join your classmates for the biggest and best reunion ever. — There are a few M.I.T. glasses left which you may purchase at the regular prices: 6-ounce Old Fashioneds, \$4 per dozen; 8-ounce Highball, \$4; 12-ounce Highball, \$4; or a package of one dozen of each for \$10 — all prices delivered parcel post insured. Just send me your check and order.

The December, 1949, issue of *Plastics Industry* carried a very fine picture of Ray Stringfield at the Pacific Chemical Conference in San Francisco. He still has a lot of hair and apparently all black. We can envy Jim Tobey his apparent retirement: "I am indeed sorry that you were not around when I was in Boston about two weeks ago, and I did not have the pleasure of seeing you. My spouse and I spent two weeks at the Harvard Forest at Petersham, Mass., where our daughter produced a son, David Ellis Hoisington, on December 6. It is my third grandchild. On my return here yesterday, I found that the glassware had arrived during my absence. A fine deal. We have sold our home here in Rye and have to be out by January 20. I may then go to Washington D.C., for two weeks' active duty in the office of the surgeon general, and after that to Florida for a month or so. We have looked around a great deal for a smaller place in Connecticut, but after January 20, a vagrant!" Nevertheless, Jim, don't lose your good old 1915 interest and contact and be sure and let us know your new address.

Al Sampson writes with his down-Maine humor: "The parcel post man came up the walk today to the tune of 'Jingle Bells.' The only sour note sounded was the announcement that the jingle was broken glass. I have not opened either carton. One seems O.K. but the other sounds most sad. Since they were sent insured there is no need of bringing Harry Truman in on it. Seasons Greetings!" Al enjoyed his Christmas drink from the glasses. Anyone else wishing to replace glasses broken in transit please write Otto Hilbert, Corning Glass Works, Corning, N.Y., and Otto will replace them at no charge — the usual splendid 1915 spirit and service. Good old Speed Swift got a little anxious but I'm sure he can save that dipper for something else: "Haven't seen anything of my set of highball glasses. I can't drink a toast at Christmas unless I use a dipper or jelly glass, I guess."

When Gene Place had that lunch with some '15 men in Los Angeles in November, he said Bob Welles sent his regards to Harold Worthington, Easty Weaver

and Henry Leeb; Frank Boynton asked for Phil Alger and John Gallagher wanted to be remembered to Loring Hall. Christmas cards to Frances and me from many classmates all over the country warmed our hearts with a comforting feeling for all these fine old friendships. It was grand to hear from all you '15 men and we enjoyed particularly the little personal notes on the cards.

Sam Eisenberg's son Herbert ('51) one of the committee on the Foreign Student Summer Project has sent me an impressive booklet composed and published by this undergraduate committee, describing (with excellent pictures) this splendid and monumental project. To realize fully what these students have done you'd have to read its 34 pages. But from this introduction, you can see what a fine job has been accomplished: "We students at MIT working on the 'FSSP' are convinced it is a practicable and valuable answer to the often frustrating question of how students as such can directly help in the re-making of this world. Continual change and improvement have marked the growth of this Project from the original rushed, but exhilarating 1948 program of a graduate technical summer school for men of war-ruined countries, to the more involved 1949 summer program of advanced research, study and industrial investigation for men experienced in the technological field. Asiatic and Middle Eastern engineers, architects, and scientists participated for the first time, in a program successfully designed to combine, as its two equal and focal aims, a new aim of assistance to industrialized but underproductive countries.

"Twenty-two nations, twelve of which were participants for the second time, were represented among the 78 individuals (average age 26 years) present at MIT. Selection had been a painstaking task. Individual screening committees publicized and distributed application forms for the Project, and did the preliminary, personal screening of applicants in each country. From ten to twenty of the best applications from each country were then forwarded to MIT, where the student committee, with the assistance and advice of the faculty, made the final selection. At no time was the financial, political, social or religious status of the applicant under consideration. . . .

"The Project was again completely student-conceived, student-planned, and student-administered. All the expenses of participants were again paid in the following way: (a) Money raised as voluntary contributions from various business firms, individuals, and foundations by the student committee paid for food, special allowances, books and equipment, medical insurance, inland transportation, and a small amount of administrative expenses — overall total, \$41,000; (b) The Corporation of MIT waived tuition fees totalling \$32,000; (c) the foreign governments (in most cases) paid oceanic transportation, totalling \$30,000. These twin aspects of student control and full payment of participants' expenses in the Project are regarded as absolutely fundamental and essential.

"Research projects on subjects from alloy induction furnaces in metallurgy to colloid problems in chemistry were the primary emphasis of the academic program at MIT, although a large number of participants took regular graduate courses. A number of papers are being published on the result of these 13 weeks of research work which, very often, was performed with equipment not available outside the United States. Only the full and cordial cooperation of the MIT faculty made such results possible. Plant trips were the other major phase of the technical work. Ten to twenty-man trips to the local New England industries, on an average of five trips a week, prepared the participants for the 10-day industrial tour sponsored by the National Association of Manufacturers through seven eastern and midwestern cities in September. These visits were of considerable practical value in demonstrating actual production techniques in the more important phases of United States industry.

"Though the technical work was the major concern, a second very valuable part of the Project was the contact of twenty-odd nationalities with each other and with Americans. Each nationality was split up and housed separately in the MIT fraternities and student houses, which volunteered space at little or no charge. Common problems in their technical fields tended to bring them together easily and quickly. In addition, every Wednesday night an informal party combined with a 'Question Box' program on American life was held. Special trips were arranged to the Tanglewood Music Festival and the Mt. Holyoke Institute on the United Nations. On weekends, visits to American homes were arranged for those who wished it by the United Nations Association. . . . The technical work produced was of a high quality; and any friction and dissatisfaction noticeable was subordinate to a feeling of cooperation which was perhaps heightened by the fact that the Project was one run by students for other, though older, 'students.' An alumni organization has been spontaneously formed to forward a common goal of interchange of persons, ideas, and technical skill."

So now, plan to be with us at the reunion and watch for the detailed announcements to follow. — AZEL W. MACK, Secretary, 40 St. Paul Street, Brookline 46, Mass.

• 1916 •

We had "oodles" of Christmas mail from classmates, as we mentioned previously. A very novel card was received from Herbert J. Gilkey, a professor at Iowa State College, which was in the form of a post card. It had a picture of Ginny, aged two and one-half, telephoning, with various arrows and asides printed around the picture. Ginny is the Professor's granddaughter, and we might add, a very lovely one.

With great sorrow we must report the death of Bruce Clarke on January 10 at his home in Englewood, N.J. His death was shockingly sudden. Your Assistant Secretary was talking with him on January 9 when he seemed to be in good

health. The next day, it was announced that his death came suddenly, quite without warning, in the middle of the night. He was technical illustration editor of the Bell Telephone Laboratories in New York and had been with the Bell System for 30 years. Just the week before, he had attended a luncheon honoring his service anniversary. He directed technical illustrations in a variety of Bell publications, including training manuals and instruction manuals produced for the armed services during World War II. Born in Plainfield, N.J., he was graduated from M.I.T. in 1916 and served overseas with the Army Corps of Engineers in World War I. He joined the engineering department of Western Electric, a Bell affiliate, in 1919, and later became a specialist in technical information. He is survived by his wife and son, Robert I. Clarke, M.I.T. Class of 1947.

Mr. and Mrs. Howard Whipple Green of 2231 Delamere Drive, Cleveland Heights, recently announced the engagement of their daughter, Patricia Anne to William H. Robinson, Jr., of Somerville, Mass., M.I.T. '24. Our congratulations and best wishes! In the July, 1948, issue of The Review, we quoted an interesting letter from George Sutherland. On December 1, following 21 years of service, George retired from the Consolidated Edison Company. George had a very successful business life and we think he is due for some relaxation and fun. If you go places George, drop us a card now and then so we can keep track of you and keep your classmates informed as to your travels. We wish you many years of happy, carefree times, and the best of health.

We have a note from Dave Shohet saying that he is at present busy constructing bridges and replacements, not the kind taught us at our old M.I.T., but the kind that goes into man's oral cavity. He is now a practicing dentist drilling and excavating, not for oil or gold, as he says, but for decay in man's teeth. He's been happily married for 34 years, has a daughter and a son, both married, and a grandson two years old. He says his hobby right now is keeping himself busy taking movies of his grandson's accomplishments which are progressing from day to day. A long newsy letter from Ken Eldredge, who is connected with the State Highway Department in Connecticut, was enjoyed. It read, in part: "I enlisted in the Army in World War I and served for one year, being in the Officer's Training Corps at the time the Armistice was signed. After working at various jobs during the next few years, I started to work in 1921 with the International Silver Company of Meriden, Conn., and traveled on the road for them for 10 years, mostly in New York State and Pennsylvania. When the depression forced the layoff of about 50 per cent of their sales force, I was included and took a position with the Connecticut State Highway Department in 1931. I have been here ever since working in various capacities until I received my present title of supervisor of contracts. I married Gertrude Barnes of New Haven in 1919 and we have three children, two girls and a boy, Kenneth, Jr. They are all married and Mrs. Eldredge

and I are grandparents to two girls. My wife and I are still living in the big house at 35 Smith Street, West Haven, and I commute back and forth to Hartford daily." It was nice to hear from Ken and we wish him lots of continued happiness with his children and grandchildren.

Alice W. Farrar, John's sister, wrote a nice letter about John. It read, in part: "For the greater part of the years since 1916, he (John) has worked for the Erie Railroad as a structural designer, first in New York and since 1931 in Cleveland. Since his marriage in 1938 he has made his home in Lakewood. He has two young daughters, Eleanor, born in 1939 and Elizabeth, born in 1941. Last August John retired because of ill health. On December 28 he returned from a 12-day stay in the hospital. He is now confined to his bed but is happy to be in his own home once more where he can have the skilled care of his devoted wife." We certainly hope that all of you who knew John, and for that matter, those who didn't, will take the time to send him a cheery letter or card so that he will know we are all rooting for him. Please do it now, before you forget. Address: 1477 Westwood Avenue, Lakewood, Ohio.

Horace Bickford answered our request for news with a nice letter. He says he put off writing because it was quite an undertaking, but from his long, newsy letter, we will take a bet that it didn't hurt a bit. He enclosed a copy of *Compass Points* a publication by and for the employees of Gibbs and Cox, Inc., of New York. Page seven was devoted to Horace and we were immediately startled by a photograph of a most distinguished looking gentleman, president of an educational institution type. He was slightly bald, or maybe it was just a very high forehead. The hair was gray above the ears and below and centered between the ears, the mustache was also gray. The text read, in part: "Mr. H. L. Bickford spends most of his time at his desk in the Machinery Scientific Section of Gibbs & Cox, Inc., on the 8th floor, but he also assists other Divisions in the study of problems with which he is acquainted. He is a licensed Professional Engineer in the State of New York and the State of New Jersey. He is co-author with Mr. Henry C. E. Meyer, who is Chief Engineer of Gibbs & Cox, Inc., of 'Determination of Thermal Expansion Stresses in Three Plane, Multi-Junction Systems by the Meyer-Hovgaard Method.' Also, he assisted Dr. William Hovgaard, Professor Emeritus, Massachusetts Institute of Technology, in the preparation of several papers published in the Transactions of The American Society of Mechanical Engineers and special reports and memoranda for his clients."

That genial classmate from Canada, Aimé Cousineau, obliged with a nice answer to our plea for news. He sent a writeup about himself prepared by a correspondent of the Montreal City Hall Press Gallery, which reads, in part: "Aimé Cousineau became head of the city planning department in 1943, but he has had a keen interest in and played an active part in planning for a quarter of a century and more. In fact, he was one of the main

speakers at the first conference on city planning ever held in Montreal in 1921. Graduate of the École Polytechnique of Montreal in 1909, with the degrees of B.A.Sc. and C.E., Aimé Cousineau served five years with the federal topographical surveys department before entering the city health department. In 1914 he won a city scholarship at M.I.T., and at Harvard University, incidentally the first Montreal city employee to do so. He received in 1916 the S.B. degree in sanitary engineering from both institutions and in 1947 he was awarded an honorary degree (D.Sc.) from the University of Montreal. Lecturer in city planning at École Polytechnique, which is the engineering department of the University of Montreal, Aimé Cousineau has not lost sight of the necessity to maintain his contact with the progress of the career he has selected. He has represented the city at sanitation and city planning conferences on this continent and abroad, where he has offered his own contributions that have received commendation from his contemporaries." We enjoyed this write-up about Aimé and hope you all have too.

Congratulations are due our Assistant Secretary, Harold Dodge. At the annual meeting of the American Statistical Association in December, Harold was elected a Fellow of the Association with the citation: "Harold F. Dodge, leader in the theory and practice of acceptance sampling, meaningful specifications of materials and tests of performance, sampling of industrial materials, and statistical control of quality." Your Secretary is real proud of Harold, as are all the rest of you, I am sure. Now if you don't come across with news, we will let Dodge loose at you!

One of the ladies of our class, Frances L. (Mrs. Sidney S.) Robins of Amherst, obliged with a nice letter. She wrote that after a brief interval at Technology and a few years in the business world she became domesticated. She has a family of one girl and four boys, three of whom served in the United States Navy and one of them, Richard, graduated with an S.M. from Technology in February, 1949. Another boy, Ralph, expects to graduate in June, 1950. Thus, they are continuing the Technology tradition in the family and we wish them the best of good health and success. We have been trying to locate some of our classmates in foreign lands to get a few words for our column. Only recently we had a welcome message from Miguel Marquez, whose stationery indicates that he is still a civil engineer. However, he points out that he is not much of an engineer nowadays for he spends most of his time at the ranch raising a good herd of commercial Hereford cattle, as good as any of its kind in Texas. His home is in Chihuahua City where, he says, he is always proud to show visitors the way Mexico is marching forward. Once again we have reported all the news for this time and have enjoyed doing it. — RALPH A. FLETCHER, *Secretary*, Post Office Box 71, West Chelmsford, Mass. HAROLD F. DODGE, *Assistant Secretary*, Bell Telephone Laboratories, 463 West Street, New York 14, N.Y.

• 1917 •

We learn that Commodore Penn L. Carroll was the guest of honor at a recent meeting of the M.I.T. Club of Monterrey, and Pancho Sada was among those present. — A distinguished honor has been conferred on Dutch duPont, and we quote from the December 31 issue of the *Wilmington Journal*: "Frank V. duPont of Greenville, former chairman of the State Highway Commission, has been made an honorary citizen of Cambridge, Md., for his gifts to the town. Mr. duPont presented a plot of ground and his farm at Horn Point, which he used as a summer residence, to the community. A four-story office building, also donated by the Delawarean, will be erected on the town plot. The Cambridge Council announced his honorary citizenship . . . as Mayor Julian Tubman turned the first spadeful of earth at the site of the new building. The council also said it will ask Mr. duPont to sit for a portrait at the town's expense."

We regret to record the death of Charles O. Drayton who was a member of the Class and then transferred to W.P.I. He was vice president of the American Screw Company of Providence. We were also sorry to learn of the deaths of Mrs. Littlefield, wife of our genial treasurer, Joe, and of the wife of Al Tonry, who conducts a general insurance business here in Boston.

We are sure that many of you must have interesting news items, but it seems awfully hard to dig them out. Your Secretary would appreciate a little help. — RAYMOND STEVENS, *Secretary*, 30 Memorial Drive, Cambridge 42, Mass. FREDERICK BERNARD, *Assistant Secretary*, 24 Federal Street, Boston 10, Mass.

• 1919 •

Ervin M. Kenison writes: "Still carrying on as an engineer for the Federal Power Commission in Washington. Two girls and boy have grown up and married. Hardly ever see any 1919 men here. Sorry I missed reunion last June. Hope to get up to Technology next June and visit the new buildings." Bob MacMullin drops a line to tell us that "the firm of R. B. MacMullin Associates, consulting chemical engineers, has grown steadily since 1945, and now includes D. W. Hingerer (Harvard), C. N. Richardson (M.I.T. '16) and my wife, Olive B., who acts as secretary-treasurer. We are doing business in England, Norway, Sweden, Germany, India, Ceylon, Mexico and other far-away places, but the bread-and-butter jobs are, of course, in the United States and Canada. This year marks completion of about 1,700 miles of the Appalachian Trail. My son Bruce (15 years) is now a trail fan. Both daughters, Beth and Carnie, are now married."

S. Albert Kaufmann writes: "Happy New Year. Still no change in my regular status." Art Blake was in to see me early in January and is now selling a new instrument, a combination of a compass and anemometer for use for outdoor activities. Jim Strobbridge dropped in on me. His wife has undergone an operation recently which was successful and she will be on her feet again soon.

Those who are still wondering where the 30-year reunion photographs have disappeared may have received them before this reading. The answer is that it takes a long time to get the names of those photographed inscribed so that when this is finished the package will be complete. — EUGENE R. SMOLEY, *Secretary*, The Lummus Company, 420 Lexington Avenue, New York 17, N.Y. ALAN G. RICHARDS, *Assistant Secretary*, Dewey and Almy Chemical Company, 62 Whittemore Avenue, Cambridge 40, Mass.

• 1920 •

As you would expect, classmates have been prominently identified with the Development Program. Featured in a recent issue of the *M.I.T. Development Program News* are pictures of Homer Howes who heads the Program organization in St. Louis. Homer looks very distinguished, even though his hairline has receded to the vanishing point. He is, of course, vice-president of Bemis Bro. Bag Company. Another of the distinguished gentlemen pictured is Al Glassett who is one of the associate chairmen of the Program's New York City area. Al has long been a prominent figure in M.I.T. activities and, consequently, a great credit to his Class. Another associate chairman of the New York Development Program Committee is Larry Davis, listed as Class of '22 but one whom we like to think of as a member of our own Class. Larry is with the Foreign Trade department of Socony-Vacuum Oil Company.

At a recent gathering of some Course XV Alumni, it was a pleasure to see Merritt Taylor who is president of the Philadelphia Suburban Transportation Company. Warren Chaffin was also there and both he and Merritt looked to be in exceedingly fine state of preservation. Warren is president of J. L. Stifel and Sons, Inc., Wheeling, W.Va. Your Secretary has also had a visit with Ralph Booth recently. Ralph, who is vice-president of Jackson and Moreland, seems to carry his responsibilities lightly and is looking hale and hearty as ever. Associated with him at Jackson and Moreland is Henry Hills. Ralph says he sees Jimmie Moir occasionally and also Harold Smiddy.

The usual interesting, handmade Christmas card was received from K. B. White of 1300 Manhattan Avenue, Union City, N.J., and 1 Villa Jocelyn, Paris. Would that other classmates would remember their poor old Secretary as faithfully, even if only in the form of a Christmas card. Of course, I'd rather have some news, but a card at least indicates that you are still alive. I did get one other very welcome card from Dorothea Rathbone, including a report that she had become a grandmother last year; her grandson, Carlos Dew, 3d, having been born in Coronado, Calif., last March. Dorothea envies Flossie Fogler Buckland's having a son at M.I.T. but says that her son-in-law might get there for graduate work some day.

Dave Fiske, formerly secretary of the American Society of Refrigerating Engineers and now a consulting engineer, was

engaged last summer by the E.C.A. for a survey of refrigeration in the Mediterranean area. Dave has specialized in low-temperature plant design and presented a paper on this subject before the spring meeting of the American Society of Mechanical Engineers last year. He is A.S.M.E. representative on the Safety Code Committee. Dr. Arthur Wilson has moved from Saskatchewan to Vancouver. Franklin Badger has made his annual winter departure to Hollywood, Fla. Grafton Owens has left Dayton, Ohio, and his new address is Cherry Hollow, Phoenixville, Pa.

Word has been received from Mrs. Collier that Raymond B. Collier passed away last June at Menlo Park, Calif. No details are given. The Class extends its deepest sympathy to Mrs. Collier.

It won't be long now before you'll be getting full details on the big 30th reunion. Don't forget the date—the week end of June 9 and 10, the place—Sheldon House, Pine Orchard, Conn., and the fact that we can already absolutely guarantee at this early date that we are going to have a whale of a good gang. Make your plans to be there without fail and let Al Glassett or me hear from you in this connection. — HAROLD BUGBEE, *Secretary*, 7 Dartmouth Street, Winchester, Mass.

• 1921 •

The summery mid-winter weather at this writing makes us wonder whether the emergence of these notes with spring will find The Review isolated by snow in its new Alumni Association quarters in Building 1—a location which all Alumni have been invited to visit. Palmer Scott, head of the New Bedford shipyard bearing the name of Palmer Scott and Company, Inc., was an exhibitor at the National Motorboat Show at Grand Central Palace in New York City. Featured at the show and in the special newspaper sections was Palmer's 18-foot dual control bass boat, which lists for the astoundingly low price of \$88.50 per mile an hour of speed. (N.B. The craft is rated at 20 miles per hour.) Also shown was a new 14-foot outboard model which, we are told, evoked much favorable comment.

Augustus B. Kinzel was elected vice-chairman of the Welding Research Council and a member of its executive committee at the annual meeting in New York. Gus is president of the Union Carbide and Carbon Research Laboratories, Inc., and the past chairman of the Engineering Foundation Board. He has been active in the Welding Research Council since it was created by the American Welding Society and the American Institute of Electrical Engineers to foster research in the welding field, and make the welding literature of the world available in condensed form. The total value of published research now amounts to more than one million dollars a year. The Council co-operates with government and trade associations and has a number of important projects under way, including research in some 30 universities as well as separate investigations of pressure vessels, structural steel, weldability, resistance welding, peening and high al-

loys. Others on the Council include: Comfort A. Adams, former staff, Carl M. Loeb, Jr., '28, Arthur E. Pew, Jr., '22 and R. E. Zimmerman '11.

Mr. and Mrs. Asher Z. Cohen of Maplewood, N.J., have announced the engagement of their daughter, Elaine, to Junius A. Krafte of South Orange. Arthur N. Brambach, formerly of Seattle, has a new home in Tacoma, Wash., at 709 North Yakima Avenue. Art is manager of International Business Machines in Tacoma. Frederick J. Curtin has moved to Freeport, Ohio, and Andrew Jensen, Jr., is now living at 93 Fairview Avenue, Jersey City, N.J. Bernard H. Moran, lieutenant commander and curriculum specialist of the Bureau of Naval Personnel, has moved from Alexandria, Va., to 3222 South Glebe Road, Arlington, Va. The Hexalphas will be interested to know that Professor Emeritus Bill Timbie, honorary member of the Class, has published Volume II of *Industrial Electricity* on alternating currents, which he coauthored with the late Frank G. Willson of Wentworth Institute. Wiley has announced the book, which is priced at \$5.96.

With deepest regret we record the passing of Gustav Henry Diechmann at his home in Forest Hills, N.Y., on December 13, 1949. He was graduated from Amherst and joined our Class in the junior year, receiving his bachelor's and master's degrees in Course X-A. He later went to Switzerland for further graduate work in chemistry and obtained a doctor's degree. During the recent war, he served as a sergeant in the Eighth Air Force in the European Theater of Operations. He is survived by his mother, Mrs. Bertha Diechmann, and a sister, Dr. Hildegard Durfee, to whom we extend sincerest sympathy on behalf of the Class.

The days are lengthening and this column grows shorter. One letter from you will prevent an asymptotic void!—CAROLE A. CLARKE, *Secretary*, International Standard Trading Corporation, 67 Broad Street, New York 4, N.Y.

• 1922 •

A card from the Oscar H. Horovitz Company announces the retirement of Oscar H. Horovitz and the change of the firm name to Owen J. McGarrahan Company with offices in Cambridge where the new firm will continue in the steel erection business. — A number of press reports have come to hand telling of the new work of Henry (Slick) Schley. The following is from the New York *Herald-Tribune* of December 10: "Henry McAlpin Schley, recently resigned as Comptroller of Columbia University, has been appointed to the newly created post of construction manager on the president's staff of The Equitable Life Assurance Society of the United States, it was announced by Thomas I. Parkinson, president. Mr. Schley's functions will include the coordination of the commercial development planned by The Equitable for the downtown business district in Pittsburgh's famous Golden Triangle. While at Columbia, Mr. Schley had overall supervision of the buildings and grounds, including

architecture and construction, maintenance and repair; the care of residence halls and dining halls, office of purchasing; besides serving on many advisory committees."

Hugh D. Haley, now an official of the American Viscose Corporation in charge of spinning and production equipment in the eight plants of the corporation producing rayon filaments, recently received his 12th United States Patent in the past 10 years. His most recent invention is for a spinning bucket compartment humidifier, which controls humidity and prevents the formation of salts in the apparatus that clog and otherwise interfere with its function. Haley, who lives in Upper Darby, Pa., is married and has a daughter, Rosamond Eleanore. Donald F. Warner, one of the engineers who developed America's first jet engine, was honored in New York on November 29 by the American Society of Mechanical Engineers. Along with others, he was cited for his contribution "to the progress of the jet engine industry in its early days, by undertaking development under conditions of abnormal pressure." The citation, presented in behalf of the A.S.M.E.'s gas turbine power division, stated: "The results achieved were outstanding and have set the pattern for the aircraft jet engine industry."

In a release from the headquarters of the New York National Guard, it is announced that: "The 101st Armored Cavalry Regiment of the New York National Guard, one of eight similar units recently authorized by the National Guard Bureau, Washington, D.C. has officially occupied its headquarters at the Squadron A Armory, Madison Avenue, New York City. This brings into being again in a new form the old and well known 101st Cavalry of the New York National Guard. Col. William C. Roberson of 151 East 83rd Street, New York City, who served with the First Army as Chief of Combat Intelligence in Europe during World War II, will be the new commanding officer. Col. Roberson actively participated in all of the planning phases for the assault on the continent and in all the campaigns of the First Army in the European Theater of Operations. Prior to World War II, he was Major and Operations Officer of the old 101st Cavalry. He is associated with the New York Stock Exchange firm of Merrill, Lynch, Pierce, Fenner & Beane."

The following is gleaned from the New York *Times* of December 2. At a luncheon meeting at the University Club, Ambassador Cyro de Freitas-Valle, head of the Brazilian delegation to the General Assembly of the United Nations, spoke on the coffee situation in Brazil. Included in his remarks was the announcement that the President of the American-Brazilian Association, Francis M. Kurtz, has been awarded the Brazilian National Order of the Southern Cross by the President of Brazil, Eurico Dutra. — Frederick S. Blackall, Jr., President of Taft-Peirce Manufacturing Company, was one of the scheduled speakers at the annual meeting of the American Society of Mechanical Engineers last December. — Our Class President, Clayton D. Grover, Vice-presi-

dent of Whitehead Metal Products Company, Inc., a subsidiary of International Nickel Company, had been elected a director of the Whitehead Company. Crawford H. Greenewalt, President of the DuPont Company, is the author of an article entitled, "Is Bigness Badness?" which appeared in the October 10, 1949, issue of *Chemical and Engineering News*.

We are sorry to have to report the death of three more of our classmates. John Lawrence Dunlevy died in Malden, Mass., late in November. Up to the time of his last illness he had been employed by Chandler and Company in Boston. The news of Louis C. Reynolds' death on December 17, 1947, has just come to hand. Your Secretary has no details. Clinton W. Howard, a Regular Army officer and a graduate in Aeronautical Engineering, died on September 22, 1949, in Sacramento, Calif., at the age of 58. He had been retired from the Army for the past three years.

We have new addresses for: Frederick J. Burt, Ruth A. Thomas, Robert M. Littlefield, George T. Boli, Carl H. Cummings, Richard E. Donnelly, Carroll S. Fisher, Eugene R. Rushton, and Francis P. Sammet.

Other activities of members of the Class on Alumni matters, in addition to those listed in the January notes, are the following: Alumni Term Members of the Corporation, Horace W. McCurdy, Frederick S. Blackall, Jr., C. George Dandrow and Thomas H. West. Committees of the Association: Assemblies, Parke D. Appel, Warren T. Ferguson; Friends of the M.I.T. Library, Eric F. Hodgins. Representatives on Departmental Visiting Committees: Course XV, Paul Ryan; Modern Languages, Theodore T. Miller. Officers of M.I.T. Clubs: Bombay, President, Ram Prasad; Buenos Aires, Secretary-Treasurer, Roberto J. Ottonello; Cincinnati, Vice-president, Valentine Friedrich, Jr.; Newark, N.J., Treasurer, H. D. MacDonald; Philadelphia, Vice-president, C. Willis Stose; Richmond, Va., Secretary, John Skelton Williams, Jr. Honorary Secretaries: District of Columbia, Harry H. Fisk, William K. MacMahon, Robert K. Thulman; Atlanta, William E. Huger; Wichita, Fred C. Koch; Augusta, Me., Willard B. Purinton; Cranford, N.J., William J. Grady; Morristown, N.J., Everett W. Vilett; Trenton, N.J., Thomas H. Gill; Buffalo, N.Y., Whitworth Ferguson; New York City, C. George Dandrow, Laurence B. Davis, Duncan R. Linsley, William H. Mueser, Raymond C. Rundlett; Rochester, N.Y., Dwight Vandevate; Syracuse, N.Y., Edwin A. Gruppe; Philadelphia, Philip M. Alden; Kingsport, Tenn., T. M. Taylor; Seattle, H. W. McCurdy; Bogota, Colombia, John O. Bower; Zurich, Switzerland, Werner Schoop. — C. YARDLEY CHITTICK, Secretary, 77 Franklin Street, Boston 10, Mass. WHITWORTH FERGUSON, Assistant Secretary, 333 Ellicott Street, Buffalo 3, N.Y.

• 1923 •

The important news this month is the result of the class election. All members of the Class received the report of the Nominating Committee which included three

items on which to vote. First, the question of whether officers should be elected every five years. Second, a list of two candidates for each officer suggested by the Nominating Committee. Third, a proposed class constitution.

Pete Pennypacker, as teller, asked Dave Skinner to assist him in making the tally and I am quoting his report verbatim, written to me on January 6 from 96 Monroe Road, Quincy: "Last evening, Dave Skinner and I jointly opened up the 238 class ballot-letters received prior to midnight December 31, 1949, and tallied same. A total of 237 votes were cast, one letter not voting. Results are as follows: A. Let's stick to our Permanent Class Officer setup, 61 votes. Would like to change to the election of officers every five years, 171 votes. B. For President: R. P. (Bob) Shaw, 118 votes; R. H. (Doc) Smith, 116 votes. For Vice-president: R. H. (Doc) Smith, 108 votes; Jack Zimmerman, 126 votes. For Secretary: H. L. Bond, 186 votes; Howard Russell, 49 votes. For Assistant Secretary: Howard Russell, 168 votes; Walt Marder, 66 votes. For Treasurer: E. A. (Red) Adams, 140 votes; Bernie Proctor, 93 votes. For Class Representative: George Johnson, 156 votes; W. T. Howland, 73 votes. C. We should adopt the proposed constitution, 172 votes. We should not adopt the proposed constitution, 41 votes. In addition to the above, six scattered votes were received which do not affect the election. In some cases the ballots were incomplete, which accounts for slight variations in total votes cast for the various offices which appear above. I am enclosing herewith a few notes which some of our classmates enclosed with their ballots."

We now have a set of officers responsible for the 30th reunion, on which plans will, in due course, be announced by the officers. The first order of business under the new constitution is to hold a meeting of the Class; the appropriate time for this is on Alumni Day and, unless the President directs otherwise, such a meeting will be held at or about five o'clock on Alumni Day in June, at a room in the Copley Plaza Hotel in Boston for which your Secretary will make arrangements.

There was no question that the idea of election of officers every five years, as recommended by the Alumni Association, was generally popular. Several members of the Class sent in notes with their ballots. A typical comment was: "I certainly have nothing but praise for the gang who have held down the job so long but it does not seem fair to make it a life long job. They should have a rest." Another comment: "I certainly haven't any fault to find with the present officers but it seems more equitable to have somebody else carry some of the load, too." There was also a good word for the work of the Nominating Committee, in which feeling is that they deserve a great deal of credit. Under the constitution, sometime prior to the 30th reunion, the President will appoint another Nominating Committee to report at the five-year meeting of the Class.

There are a few additional personal notes. Bernard E. Proctor, Professor of Food Technology and Director of the

M.I.T. Food Technology Laboratories, is the chairman-elect of the Division of Agricultural and Food Chemistry of the American Chemical Society. — I had a card from José Carlos Bertino, retired naval officer and Professor of Naval Architecture in Buenos Aires. The card came in last summer from Italy. I now have a note from him telling what he was doing in Europe. He spent five months there, partly to attend meetings at Copenhagen in September between the Danish Naval Constructors and the Institution of Naval Architects of London. — HORATIO BOND, Secretary, National Fire Protection Association, 60 Batterymarch Street, Boston 10, Mass. HOWARD F. RUSSELL, Assistant Secretary, Improved Risk Mutuals, South Broadway, White Plains, N.Y.

• 1924 •

"The Howard Whipple Greens, who are having their annual Christmas Day open house at their residence, 2231 Delamere Drive, Cleveland Heights, will be announcing tomorrow the engagement of their daughter, Patricia Anne, to Mr. William Henry Robinson, Jr. Miss Green, known as Patty Anne, was graduated from Allegheny College and belongs to Theta Upsilon sorority. Her fiancé, the son of Mr. and Mrs. William Henry Robinson of Somerville, Massachusetts, was graduated from . . . Technology where he also took graduate work. The wedding will be in the late spring." Congratulations, Bill, and the best wishes of all of us. Mr. Green, incidentally, is also an M.I.T. man, Class of 1916.

An unusual honor was bestowed on a classmate when Secretary Snyder presented Louis Tanner with the Treasury Department's "exceptional civilian service award." With the United States Customs Service for 23 years, Louis is now chief chemist of their Boston laboratory. It isn't quite clear for what specific reason the award was made, but among his accomplishments is the establishment of the only wool testing laboratory in the United States. Harrison G. White has been retained by the Springfield (Mass.) Building Code Revision Committee as a technical expert. A consulting architectural engineer, White came out of the war as a captain, U.S.N.R., is currently commanding officer of the Naval Reserve unit in Springfield. — Notification of the deaths of two of our naval officer classmates was received this month. Captain Robert K. Wells, last reported at the base in New Orleans, died on April 15 last year. No details. Mortimer E. Serat, Jr., lieutenant commander, U.S.N., retired, assistant to the vice-president of the Electric Boat Company, died on December 19. Serat retired from the Navy in 1940. He had been in failing health for some years. — In late January, Otto Koppen gave a very illuminating talk to the Alumni Council. He told all about his remarkable private plane, the Helioplane. You probably read about it in *Life*. It's a nonstall, nonspin, 27 m.p.h.-landing-speed job that flies like nothing more or less than an optical illusion. Otto had it over at the Institute one day recently to show it off. He's taken

practically all decisions out of the pilot's hands. To take off you give it the gun, haul back hard on the stick, and just sit there. In five seconds and less than 100 feet you're airborne. And it comes down slower than a parachute! Looks very much as though Otto really has something there. Also in late January, the Northeastern Bird-Banding Association met in Boston. President Charles H. Blake was in the chair. Charlie has banded so many birds around his home that every one wearing an anklet — and most of them are — is now known as a Blake bird. A new and easier version of the robin and non-robin school of identification; they're Blakes and non-Blakes around there.

Among the nominees for term member of the M.I.T. Corporation (you'll get them on your ballot just about now), Charles A. Thomas, Executive Vice-president of Monsanto Chemical, the second '24 man to be so honored; the first, Frank Barrett. — HENRY B. KANE, *General Secretary*, Room 1-272, M.I.T., Cambridge 39, Mass.

• 1926 •

This month's mail from the Class was nonexistent. Some Christmas cards from various classmates brightened the holiday season, however. Charlie Rich has been sending me a photographic card each Christmas for a great many years, showing his three daughters at annual stages. This year his daughters have become young ladies and from the photograph my guess is that one daughter now is as tall as Charlie. A few years ago Charlie returned to Swanton, Vt., to run the family lime works, so the girls are growing up in great country. Classmate Father Arthur Riley also sent a photographic Christmas card — a religious one — you are a good photographer, Arthur, that's one of my hobbies, too. Bill Edwards sent one of his cards promoting his calendar, about which most of you know. He calls it the Edwards Perpetual Calendar, and you can underline Perpetual for Bill is certainly sticking to his hobby of trying to get recognition for the calendar. By the way, Bill, what are you doing out there in Honolulu; the last I knew you were in the Navy but that was several years ago. The clipping services only brought one item of news this month; a clipping from the *Atlanta Constitution* which tells about a speech at the Georgia Illuminating Engineering Society by George J. Taylor. You certainly get around, George. This would wind up the class notes for the month but I have had another brainstorm. You will recall that last month I threatened to fill the column up with hot air if you fellows did not write to me, but I'm not going to follow through on the threat — at least not yet. I have found that when I write to a specific classmate for some news I get a nice answer that can be used in the notes, and I am sure that you all must enjoy reading these answers. Therefore, I shall continue this practice, but I think we will all get better acquainted if I write to various classmates through these columns. I know a great many of the Class, but there are also a great many whom I do not know so I'll skip around — there will be no rhyme and

no reason to my system — therefore, no system. Let's go!

Let's take a zoom out to India. Hello, Bill Rivers! Bill, you will recall, is with Standard-Vacuum Oil in Calcutta, and when he was here for our '20th he had a British accent and a British moustache, as I remember. One thing that Bill told me that stuck was that there were very few filling stations in India, so when one goes motoring it is necessary to carry the gasoline along in five-gallon cans. It's about time we heard from you again, Bill, and I am sure you can tell us a great many interesting things. We are looking forward to your letter and also to word that you will be here for our '25th. C. Frederick Abbott is a name that is familiar but I have never met him and note that he was a graduate student in Course X. I am particularly fascinated by his listing in the Alumni Register as being retired and living in Gibson Island, Md. How about a get-acquainted note from you, Fred, and if you care to tell, I am sure that many of us would be interested in knowing how this retirement business works. As I said above, it sounds fascinating.

Hello there, Gordon Spear, out in Detroit. I note that in your last letter you said you expected to be in Boston in April; well, I expect to be in Detroit about April 19 and I hope our timing is such that we will meet both in Boston and Detroit. Also, when I visit Detroit this time, I want to see something. (Last time Gordon couldn't get me into G-M proving ground, so I fooled him and went through the Ford plant.) Hi there, Smith Davison Turner, over in London. How about checking up on some of the '26 men in England — none of whom I know. There is H. S. Pink with Imperial Chemical at Huddersfield, M. R. Hodder at 11 Fircroft Solimull, Warwickshire and F. W. Bahr, Rosslyn House, Oatlands Park Drive, Weybridge, Surrey, England. You have a potential '26 club over there, let's hear about it. And as for you, Ray Mancha, down there in Pittsburgh, how about a little script? After the beautiful job you did on the write-up of our 21st reunion, there is no excuse you can offer that will brush me off. By the way, you had better get that ole banjo out of hock pretty soon and start running up to New York to practice with Dave, because Al Dolben has already told me that one of the main features at our 25th reunion will be a series of banjo duets by Mancha and Shepard. Have you been to the races lately, Jim Dunham? (Jim and I waved at one another at the Kentucky Derby in '45.) It was just a junket for me. I'm too much of a conservative New Englander for that kind of sport; the money disappears too fast. Have you seen any of the boys?

According to the 1948 Alumni Register, there are seventeen '26 men in Chicago. Otto Wiessner, if my memory is correct, however, has moved to Connecticut, but the balance of the '26 men in the Chicago area are George Hannauer, Jr., with Bauer and Black, Bruce Humphreville with Johns-Manville, H. F. King of Sears Roebuck, Joe LaVielle at the Hotel Maryland, Wendell C. McClure, also with Johns-Manville, George H. Palm with

Alemite, Francis P. Romanoff with Empire Manufacturing Company, Cyril S. Smith at the University of Chicago, D. K. Taylor with Connelly, Inc., Tom S. Washburn with Inland Steel, Frank A. Wilkinson with Enterprise Paint, John Wills with Northern Trust Company, Nelson Wilmot with Mathieson Chemical and Willard M. Woll with Commonwealth Edison. That's a pretty good crowd of '26 men located in our midwestern metropolis, and I think you fellows should get organized, especially with a reunion coming up in another year. I hereby appoint Johnny Wills, Bruce Humphreville and Nelson Wilmot as a committee of three to get this Chicago '26 group together sometime in the near future. Don't let it interfere with any Development Program schedules (my guess is that it will help rather than interfere) but as soon as you see fit, why not have yourselves a dinner party. Let me know how you make out, Johnny Wills, so I can put it in the notes; and, meanwhile, how about a word of greeting from each and everyone of you Chicago '26 men. Next month I'll get around to additional members of the Class, but since you don't know when your name is going to be called, why not drop me a note and tell us how yer doin'. See you all in March! — GEORGE WARREN SMITH, *General Secretary*, E. I. du Pont de Nemours and Company, Inc., Room 1420, 140 Federal Street, Boston, Mass.

• 1930 •

It is with deep regret that we report the death of Robert B. Fawcett on October 11, 1948. He was process superintendent of Tide Water Associated Oil Company in California. — Also from California comes word that Tom MacLaren is now residing in Arcadia. His former home was in Philadelphia, where he was a sales engineer for Browne and Sharpe.

The Development Program is now in full swing and our Class may be counted upon to do its loyal best in support of the current campaign for gifts to the Development Fund. Attention is called once again to the rapidly approaching month of June, when our 20-year reunion will be held on the 10th and 11th at the Riversea Inn at Old Saybrook, Conn. If we all talk it up with every 1930 man we meet between now and then, a record turnout can be expected. Reserve those dates now and remember also that Alumni Day at the Institute comes on the 12th of June. We hope to see you there, too. — PARKER H. STARRATT, *General Secretary*, 1 Bradley Park Drive, Hingham, Mass. *Assistant Secretaries*: ROBERT M. NELSON, 2446 Irquois Road, Wilmette, Ill.; ROBERT A. POISSON, 105 East 88th Street, New York 28, N.Y.

• 1934 •

A recent editorial in the Brooklyn, N.Y., *Eagle* gave a very interesting account of the work being done by Vito P. Battista in laying out the civic architectural plans in Brooklyn. We quote the article as follows: "When a bigger and better Brooklyn is built, Vito P. Battista will have a hand in building it, and he has already started the hot rivets flying. The rising

new Transportation Building on Jay St., in the Civic Center, now in the first stages of evolution will be one of the city's monuments to this architect, who already has numerous large public buildings to his credit. For the new Brooklyn Supreme Court Building and, in fact, the Civic Center itself, Mr. Battista has been a co-designer. But he's just begun to plan for Brooklyn. . . . This tremendous drive toward making a finer Brooklyn, individually, is one of the dominant forces in the Battista personality, one of the things that make him tick. There's another, a comparatively rare trait in a successful professional man. He makes a side career out of helping competitors. For two years he has been running the Institute of Design and Construction, a graduate school for architects and engineers, in his own office building, 26 Court St. . . . Since Mr. Battista directs it personally, he has to be there every night. . . . One aim of the Institute of Design and Construction is to coordinate all the different kinds of knowledge that go into the building trades. . . .

Battista, now only 36, had earned \$20,000 before he was 18, selling ice in partnership with his father in the Bushwick section. At the same time he was going to high school nights, and making plans for the very career he is now following. 'I wanted money as a means to an end,' he explained. 'I had to have money for the kind of training I meant to get.' He got a B.A. in architecture at the Carnegie Institute of Technology, took his M.A. at the Massachusetts Institute of Technology, studied at the Beaux Arts Institute of Design in New York and at Columbia University, took many prizes and then went abroad, armed with a graduate scholarship from M.I.T., studied at Fontainebleau, and saw all the architectural wonders of Europe. He came back with the fixed idea that moderns require modern buildings. 'Monuments of the past are fine to study from,' he observed. 'But a building 200 years old is not the answer to modern needs.' Battista and his wife, a former school teacher, live at 1913 61st Street. They have two children, Sabina, 8, and Vincent, 4. Extremely child conscious, Mr. Battista has plans for playgrounds and for removing the current street hazards to children. He spent seven years as architect and city planner in the Department of Public Works, was an architectural co-designer for the New York World's Fair and is an institutional planning consultant for Henry V. Murphy, famous architect. He is president of the Brooklyn Society of Architects, a section of a national group, is active in many other professional organizations and is a member of Municipal Engineers of New York and the Regional Plan Association. He has built hospitals and apartment houses and sewage disposal plants and fire houses and court houses the length and breadth of New York City and Long Island. But it's Brooklyn he has set his heart upon as the place that offers real scope for architectural planning. 'Brooklyn needs a great renaissance,' he said. 'Many neighborhoods are run down and need complete overhauling, and even our fine buildings are for the most part in neighborhoods that are not properly organized. Brooklyn needs parks, playgrounds, schools. It

needs highways that make the different sections of the borough available to all the other sections. The highways already built or being built are fine for getting around the outside of the borough, but we need to make the different areas more accessible within Brooklyn.'"

Bob Roulston is back in Boston again after spending the past two years in Detroit. He is now district manager of the Herman Nelson Corporation at 80 Boylston Street. They handle all kinds of heating and ventilating equipment and specialize in ventilators for school buildings. — Mr. and Mrs. Samuel Mixer of Brookline announce the engagement of their daughter, Elisabeth W. Mixer, to Henry A. Morss, Jr. Miss Mixer attended the Winsor School and the School of the Museum of Fine Arts and is a member of the Junior League and the Vincent Club. — JOHN G. CALLAN, JR., *General Secretary*, 184 Ames Street, Sharon, Mass. ROBERT C. BECKER, *Assistant Secretary*, Chile Exploration Company, Chuquimata, Chile, S.A.

• 1939 •

News for class notes being extremely meagre, it is requested again that contributions be forwarded. Via the Christmas card route it is learned that Fred Cooke has left Washington, having been transferred to San Juan, Puerto Rico, shortly following the arrival of a baby girl; the family will join him in living quarters which are "better than anticipated." — The press clipping bureaus have been full of the news of Dick Cella's recent marriage to Georgena Brannon and their honeymoon private plane trip to Florida, Cuba, and Mexico City. The routine has commenced again, however, for Dick who has settled in Washington, D.C., where he is working in aeronautical research and development.

Al Schreiber also made news by presenting a talk on January 5 to the Worcester chapter of the American Society of Mechanical Engineers on, "Radio-isotopes for Industrial Problems." Al is industrial sales manager for Tracerlab, Inc., in Boston. Ernie Kaswell has been elected a fellow of the Textile Institute of Great Britain. The award was largely in recognition of his research in fields of the low-temperature characteristics of textile materials and the stripping of colors from wool to allow re-use. Incidentally, Ernie, in 1947, was coauthor of a prize winning paper in the Association of Textile Chemists and Colorists' intersectional contest.

Also, we hear of much activity with Hal Seykota who has left the Liquid Carbonic Corporation and joined the Converse Corporation of Seattle, makers of high quality telephone "intercoms." Hal has, of course, migrated from South America to Seattle where he's been fortunate enough already to acquire a house, a view and the beginnings of furniture. Likewise, he has made contact with others from the Class in the area; Jim Barton, John Alexander, Bob Withington, and Ted Snow, all of whom, strangely enough, are currently busy enlarging their homes. — STUART PAIGE, *General Secretary*, 701 Mill Plain Road, Fairfield, Conn. ROBERT C. CASSELMAN,

Assistant Secretary, 42 Holman Road, Auburndale 66, Mass.

• 1940 •

Tenth reunion, Class of '40, June 10 through June 12, 1950. Robert Bittenbender, chairman, 287 Waban Avenue, Waban 68, Mass. — H. GARRETT WRIGHT, *General Secretary*, Garrett Construction Company, Main Post Office Box 629, 510 Sherman Avenue, Springfield, Mo. THOMAS F. CREAMER, *Assistant Secretary*, 6 Berkley Road, Scarsdale, N.Y.

• 1942 •

You readers of this column may have noticed a gradual change coming over our descriptions of employment as we grow older and are perhaps thought to be wiser. At first occasionally, and recently with increasing frequency, announcements have been received of '42 men in positions with titles that imply a considerable amount of responsibility and recognized ability. Your Secretary has been in a favorable position to observe this development and feels impelled to suggest that these advances, together with the already evident increase in family obligations among us, mark the beginning of a transition into a phase of our lives which can be most rewarding in terms of responsibility and achievement. The latest report of such advancement is an announcement that Harry Platt has been appointed vice-president of the Engineered Castings division of the American Brake Shoe Company. Harry was most recently works manager; he joined the company on graduation in '42.

Another example of advancement in one's chosen field has cropped up in a newspaper article concerning the engagement of Felix DeLeo to Florence La Ferriere of Lowell. Felix, at last word, had been working as a chemist with the State Police. His many friends and admirers will be happy to know that he is now not only engaged but also is an assistant to the Massachusetts Commissioner of Public Safety. A recent release from the Foreign Service of the United States informs us that John Iams has been transferred from Athens to Praha as third secretary and vice consul. John was a research associate in the Department of Economics and Social Sciences here in 1946-47, after service with the Army in the European and African theaters, and joined the Foreign Service in June, 1947.

One of the recent announcements of rather surprising accomplishment for '42 men was that Wallace Murray had been named headmaster of Berwick Academy in South Berwick, Maine. If you wonder what manner of academic institution might have one of our classmates at its head, here is some information concerning the school. Berwick Academy is an old and independent school which, like a number of other private secondary schools in Maine, serves its geographical area as a public high school, at the same time taking private students from outside this area and offering unusual educational benefits made possible by private endowments. It is coeducational and its 135 students enjoy the advantages of modern equipment and an excellent library while pursuing their

studies among the traditions of the oldest secondary school in Maine. The academy holds an original charter from the Commonwealth of Massachusetts granted in 1791.

There are but two marriages to report this month. Barbara Jane Manley of White Plains, N.Y., was recently married to Russell Brown of Greenwich, Conn.; and Lenore Roslyn Garland of New York, a member of the cast of the play, *Goodbye My Fancy*, has been married to Robert Bloom. — Your Secretary is becoming an accomplished rewrite man, working chiefly on newspaper clippings. He would appreciate an opportunity to write some direct news. — GEORGE M. KAVANAGH, *Acting Secretary*, Room 4-055, M.I.T., Cambridge 39, Mass. KARL E. WENK, JR., *Assistant Secretary*, 11 Ledge Road, Old Greenwich, Conn.

• 1943 •

Well, chums, John Douglas Proctor is another candidate for M.I.T. '66. He was born to Stan and Lois Proctor on September 8, and, according to Stan, was the best news of 1949! The Proctors are living in Shaker Heights, Ohio, at 12930 Fairhill Road. Perhaps Wellesley, also, has earned a new recruit because Curt and Barbara Smith tell me that Carolyn Curtis was born on November 7. Barbara, with forgivable modesty, describes Carolyn as the prettiest quietest, and most content baby ever!

At Christmas time, Betty and I took a week's vacation and drove back to Betty's home in New York for the holidays. While there, we spent a delightful evening with Dick and Betty Haas, and, for the first time met Susan who has attained the ripe old age of eight months. She is the image of both her dad and mother; and, when we saw her, she had acquired the art of standing. Dick is a patent lawyer with the Union Carbide and Carbon Corporation, and is soon to sit for the patent bar examinations. Cal Dunwoody tells us he has bought an airplane, that, according to him, keeps him out of mischief by keeping him eternally broke. He adds, also, that he is beginning to like teaching more and more. As you will recall, Cal studied forestry at Yale and is now on the staff at Brown University. He says that he sees Hugh Pastoriza every once in a while. The latter is at Harvard Business School. Hans Haac, still with Du Pont, is living at Little Silver which is near Red Bank, N.J. He has taken up golf and is also enjoying the seashore. He finds the country club at Fort Monmouth with its golf course, swimming pool and beach club "just marvelous." I have heard, indirectly, that Bob Maxwell has left the Chemical Engineering Department at M.I.T. and is now with Procter and Gamble. He has recently sailed for the Philippines.

Helen Patricia Bardsley and William O'Neill were married at the Church of the Blessed Sacrament in Schenectady, N.Y., on October 29. In the Presbyterian Church in New York City on November 26, Elizabeth Merrell and Robert W. Hull

were married. His bride is a graduate of Elmira College, whereas the groom did his undergraduate work at Yale, and later received his Ph. D. degree from M.I.T. in 1943. He is now a member of the research staff of the Bell Telephone Laboratories in Murray Hill, N.J. The Hull's spent their wedding trip on Bermuda, and upon returning to the States they will live temporarily in Chatham, N.J., at 39 North Summit Avenue until their home at Basking Ridge is finished. The wedding of Suzanne Norman and James A. Malloch, Jr., took place in Brooklyn on December 3 at the Queen of All Saints Church. — CLINTON C. KEMP, *General Secretary*, 29 Verlynn Avenue, Hamilton, Ohio.

• 1944 (2-44) •

Things are beginning to look up in the news department as some of you wrote me very interesting letters. Bob Faurot has run across a good idea which maybe some of the Class would like to follow. He has decided that every two years he would sit down and write your Secretary about the high points of that two-year period. Now, if everyone in the Class did the same, it would enable me to have some very informative notes for The Review. Bob states that he left Goodyear in 1948, put his G.I. Bill in his pocket and took off for Europe where he got in a year of school in Geneva and traveled by all means from bicycle to airplane from Ireland to Turkey and from Stockholm to Algiers. He had some interesting moments when he ushered at an English wedding and when he spent a week in a Polish jail. At the present time, Bob is doing industrial engineering for Acadia Synthetic Products division of Western Felt Works in Chicago. Lew Tyree is now in the motor freight business known as the Hinchcliff Motor Service Company in Chicago. Dave Himmelblau '47 is collecting data for his master's thesis which he is writing at Northwestern. It is on industrial training programs for executives. Fran Carey is still single and working for a leather outfit in Boston and is learning about modern production methods. Roger Freeman and family are in Providence where he has the insurance business under control.

Bob Copsey writes that he is spending the winter in El Paso, Texas, on a Sperry project (radar computer-power control). He hopes to get on to the L.A. vicinity by next summer on the same job but a different location. Bob was married on November 5 to Laura Lover of Washington and Charleston, W.Va. Hank Bourne '47 is still in Boston working on his Ph.D. degree in electrical engineering. Hank does find time, however, to get in some skiing in New Hampshire on top of Cannon Mountain. Bob Plachta '46 has left the ranks of Filene's Department Store in favor of Technology. He is now administrative assistant to Professor Hazen, Head of the Electrical Engineering Department. Bob has decided that merchandising is not his career. Bob Breck has also arrived at that conclusion, as he has left Filene's.

Hubert Judd of Dalton, Ga., has started collecting ancient-vintage Fords as a hobby. He teaches ballroom dancing as his work. Hubert is a mechanical engineer from Technology. He got interested in teaching dancing when he was overseas in the Navy and took lessons sponsored by the U.S.P. Fred Cavanaugh married Joan Heinzelmann of Bronxville, N.Y. Fred graduated from the Harvard Business School in 1948. He served with the Army as a lieutenant and was a member of the Allied Mission to Greece. Spencer Schilling is to marry Ruth Halvorsen of Long Island. Richard McGarry is now engaged to Anne Woods of Riverside Drive, N.Y. He is employed as a chemical engineer in New York. John Chamberlain is now an engineer in the research department of the United Aircraft Corporation. Jean Davis married Bob Maher. Carl Soderberg and Nancy Traill of Spencer, Mass., are engaged. — WILLIAM B. SCOTT, *General Secretary*, 3916 Potomac, Dallas, Texas. MALCOLM G. KISPERT, *Assistant Secretary*, Room 3-208, M.I.T., Cambridge 39, Mass.

• 1946 (2-46) •

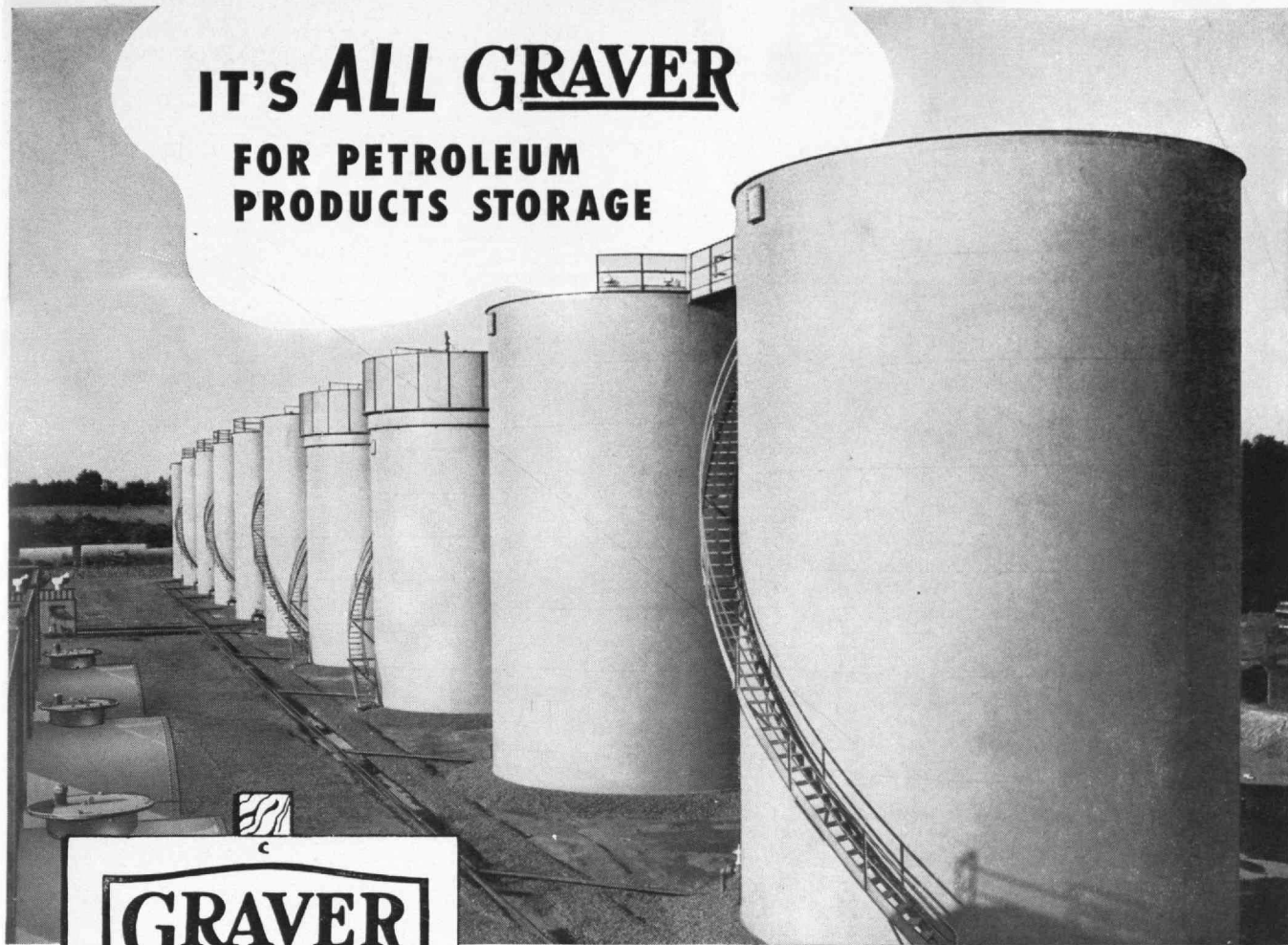
Change of address notices continue to pour in from the Alumni Office in such quantities that the class directory published last year must surely be obsolete by now. Herb Hansell and your Secretary plan to put out a supplement sometime soon this year. In anticipation of this, your Secretary requests each classmate to notify the Alumni Office in the event that his most recent address is not listed.

There is only one marriage to report in this issue and that is the marriage of Dan Cooper and Bette Gelula of New York City on October 16. The Coopers are now living in Boston at 1175 Boylston Street. Bob Hoffman and Marion Brask of South Orange, N.J., announced their engagement in October. Bob is with the Worthington Pump and Machinery Company in Harrison. Don Burke writes that he and Pat Pattison of New York City have become engaged, but the wedding will have taken place (at St. Patrick's) by the time these notes are published. Lou Martin, whose engagement was announced in previous notes, has written to fill in on what he's doing. After a prolonged tour of duty as an electronics officer in the Navy, Lou is back at the Institute working in the Servomechanisms Laboratory and studying for his master's degree.

The lack of snow this winter is at least agonizing to one member of our Class, John Marr, who has been named Boston representative of the Waterville Inn, Waterville Valley, N.H. John graduated from Boston University's school of public relations in January. John Wandrisco, who graduated from the Harvard Business School in June, is living in Waterbury, Conn., where he is sales manager for the Precision Screw Machine Products Company. — JAMES S. CRAIG, *General Secretary*, 387 Harvard Street, Cambridge 38, Mass.

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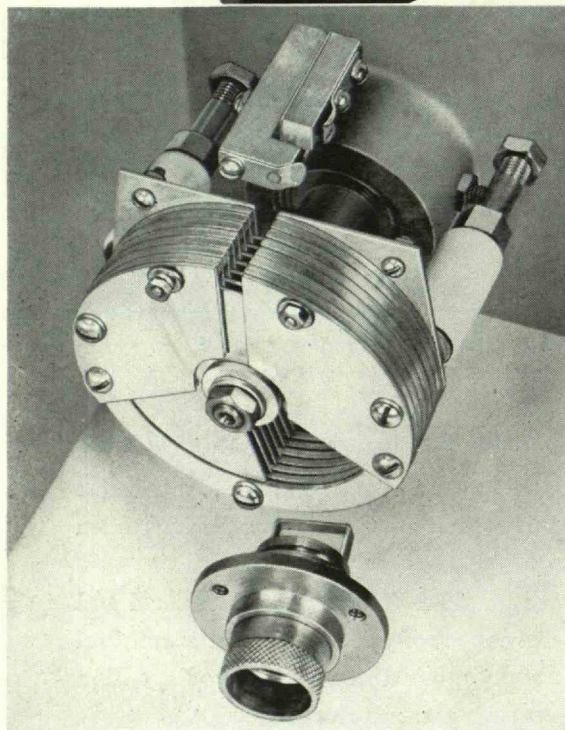
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